

**DIRECT TESTIMONY****OF****JOSEPH M. LYNCH****ON BEHALF OF****SOUTH CAROLINA ELECTRIC & GAS COMPANY****DOCKET NO. 2016-223-E**

EXHIBIT NO: #19  
WITNESS: [Signature]  
DATE: 9-25-18  
THOMPSON COURT REPORTING INC.

1 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND CURRENT**  
2 **POSITION WITH SOUTH CAROLINA ELECTRIC & GAS COMPANY**  
3 **("SCE&G" OR THE "COMPANY").**

4 **A.** My name is Joseph M. Lynch and my business address is 220 Operation  
5 Way, Cayce, South Carolina. My current position with the Company is Manager  
6 of Resource Planning.

7 **Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**  
8 **PROFESSIONAL EXPERIENCE.**

9 **A.** I graduated from St. Francis College in Brooklyn, New York, with a  
10 Bachelor of Science degree in mathematics. From the University of South  
11 Carolina, I received a Master of Arts degree in mathematics, a Master of Business  
12 Administration degree, and a Ph.D. in management science and finance. I was  
13 employed by SCE&G as a Senior Budget Analyst in 1977 to develop econometric  
14 models to forecast electric sales and revenue. In 1980, I was promoted to  
15 Supervisor of the Load Research Department. In 1985, I became Supervisor of

1 Regulatory Research where I was responsible for load research and electric rate  
2 design. In 1989, I became Supervisor of Forecasting and Regulatory Research,  
3 and, in 1991, I was promoted to my current position of Manager of Resource  
4 Planning.

5 **Q. WHAT ARE YOUR CURRENT DUTIES AS MANAGER OF RESOURCE**  
6 **PLANNING?**

7 A. As Manager of Resource Planning, I am responsible for producing  
8 SCE&G's forecast of energy, peak demand, and revenue; for developing the  
9 Company's generation expansion plans; and for overseeing the Company's load  
10 research program.

11 **Q. HAVE YOU TESTIFIED BEFORE THE PUBLIC SERVICE**  
12 **COMMISSION OF SOUTH CAROLINA ("COMMISSION")**  
13 **PREVIOUSLY?**

14 A. Yes. I have previously testified on a number of occasions before this  
15 Commission.

16 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

17 A. The purpose of my testimony is to present the results of two studies of the  
18 cost to construct the V.C. Summer Units 2 and 3 (the "Units") under the  
19 Engineering, Procurement, and Construction Agreement ("EPC Contract") as  
20 amended by the October 27, 2015 Amendment ("Amendment"). The first study,  
21 attached as Exhibit No. \_\_ (JML-1), is a sensitivity study that analyzes the impact  
22 of SCE&G's option to transfer the majority of the remaining EPC Contract cost to

1 the Fixed Price category (the "Fixed Price" option) as provided by the  
2 Amendment. This study compares the cost-to-complete construction of the Units  
3 under several labor cost scenarios relative to the cost of the Fixed Price option.  
4 The second study, attached as Exhibit No. \_\_ (JML-2), is an economic study  
5 comparing the impact on revenue requirements of continuing construction of the  
6 Units as opposed to terminating the project and building natural gas combined-  
7 cycle units instead.

#### 8 **THE SENSITIVITY STUDY**

##### 9 **Q. WHAT IS THE STRUCTURE OF THE SENSITIVITY STUDY?**

10 A. The sensitivity study analyzes the impact of labor costs on the cost-to-  
11 complete the Units. There are two primary components to labor costs: 1) the labor  
12 cost per hour, and 2) the number of hours worked (specifically in this case, the  
13 number of hours to complete construction of the Units).

##### 14 **Q. WHAT WAS THE LABOR COST PER HOUR USED IN THE** 15 **SENSITIVITY STUDY?**

16 A. The sensitivity study uses the labor cost per hour as of December 2015  
17 calculated as an average in the categories of all direct craft workers, all indirect  
18 craft workers, and all field non-manual workers. SCE&G projected these three  
19 labor rates to increase by 2.9% per year over the remainder of the construction  
20 period. This scenario is the "base case" or "2.9%" scenario. The 2.9% growth  
21 rate was chosen because that is the 5-year compound growth rate of the Handy-  
22 Whitman cost index in the "All Steam & Nuclear" category for the South Atlantic.

Also, by coincidence, it is the 5-year growth rate in construction labor costs projected by our economic forecasting firm, IHS Global Insight, Inc. ("IHS"), over the period 2016-2020 averaged over several categories of labor, again, for the South Atlantic region of the country.

**Q. HOW MANY DIFFERENT SCENARIOS DID SCE&G ANALYZE IN THE SENSITIVITY STUDY?**

A. Exhibit No. \_\_ (JML-1) reflects the results of my sensitivity study and shows that four different labor growth rates for the completion of construction of the Units from the current time to the Guaranteed Substantial Completion Dates ("GSCDs") under the Amendment were analyzed. The four scenarios are:

- The "no growth" or "0%" scenario represents a labor growth rate of 0%.
- The "base case" or "2.9%" scenario represents a labor growth rate of 2.9%.
- The "medium growth" or "5.0%" scenario represents a labor growth rate of 5.0%.
- The "high growth" or "7.0%" scenario represents a labor growth rate of 7.0%.

**Q. WHICH LABOR RATE SCENARIO DOES SCE&G BELIEVE IS THE MOST LIKELY TO OCCUR?**

A. While there is much uncertainty in projecting future labor rates, SCE&G believes the no growth scenario representing no growth in labor rates to be unrealistically optimistic. On the other extreme, the high growth scenario represents a strong growth in labor rates that is possible but similarly unlikely.



1 The base case scenario, corresponding to a 2.9% growth in labor rates, represents a  
2 small premium over inflation which would be reasonable under most situations.  
3 However, considering the skilled labor force required for this project and the need  
4 for night time work hours, a faster growth rate is likely. Consequently, SCE&G  
5 believes the most likely scenario for future labor rates is between the base case  
6 (2.9%) and medium growth (5.0%) scenarios.

7 **Q. HOW DID THE SENSITIVITY STUDY REFLECT VARIATIONS IN THE**  
8 **NUMBER OF HOURS REQUIRED TO COMPLETE CONSTRUCTION**  
9 **OF THE UNITS?**

10 A. The productivity factor ("PF") was the evaluation measure used in the  
11 sensitivity study to reflect variations in the number of hours required to complete  
12 construction of the Units. SCE&G defined the PF as the ratio of the number of  
13 actual direct craft hours worked to complete a project compared to the number of  
14 hours budgeted for that work. Six PF scenarios were studied: 1.00, 1.15, 1.25,  
15 1.50, 1.75, and 2.00.

16 **Q. WHAT IS THE SIGNIFICANCE OF THE PF?**

17 A. The PF represents the efficiency with which direct craft laborers are  
18 working to complete tasks. A PF of 1.00 means that the actual number of hours  
19 required for a task was the exact number of hours budgeted for that task. For  
20 example, if a certain welding job was budgeted to take 4.0 hours, then a PF of 1.25  
21 would mean that the welding job actually took 5.0 hours to complete (4.0 hours ×  
22 1.25 PF = 5.0 hours).

1   **Q.    SINCE THE PF APPLIES TO DIRECT CRAFT LABOR HOURS ONLY,**  
2       **HOW DOES THE SENSITIVITY STUDY ACCOUNT FOR INDIRECT**  
3       **CRAFT LABOR COSTS AND FIELD NON-MANUAL LABOR COSTS?**

4   **A.           Indirect craft labor supports direct craft labor by providing such things as**  
5       **worker training, safety, warehouse staffing, and facilities maintenance. In order**  
6       **for construction to be completed by the GSCDs, SCE&G estimates that**  
7       **approximately 0.66 hours of indirect craft labor is required to support each hour of**  
8       **direct craft labor. While the actual indirect-to-direct ratio may vary from 0.66,**  
9       **SCE&G does not believe any variations would be significant and has kept this**  
10      **ratio constant for the sensitivity study. Field non-manual labor represents the cost**  
11      **of field engineers, quality assurance and control, administrative support, and**  
12      **related non-manual labor. In order for construction to be completed by the**  
13      **GSCDs, SCE&G estimates that approximately 0.74 hours of field non-manual**  
14      **labor is required to support each hour of direct craft labor. Thus, as was done with**  
15      **indirect craft labor, the ratio of field non-manual labor-to-direct craft labor is fixed**  
16      **at 0.74 for the study. Consequently, in the sensitivity study as direct craft labor**  
17      **hours vary so does the number of indirect labor hours and field non-manual hours**  
18      **as well as the associated cost for those categories of labor.**

1 **Q. ARE YOU BEING CONSERVATIVE BY SETTING THE RATIO OF**  
2 **INDIRECT LABOR HOURS TO DIRECT LABOR HOURS AT 0.66 AND**  
3 **THE RATIO FOR FIELD NON-MANUAL LABOR AT 0.74?**

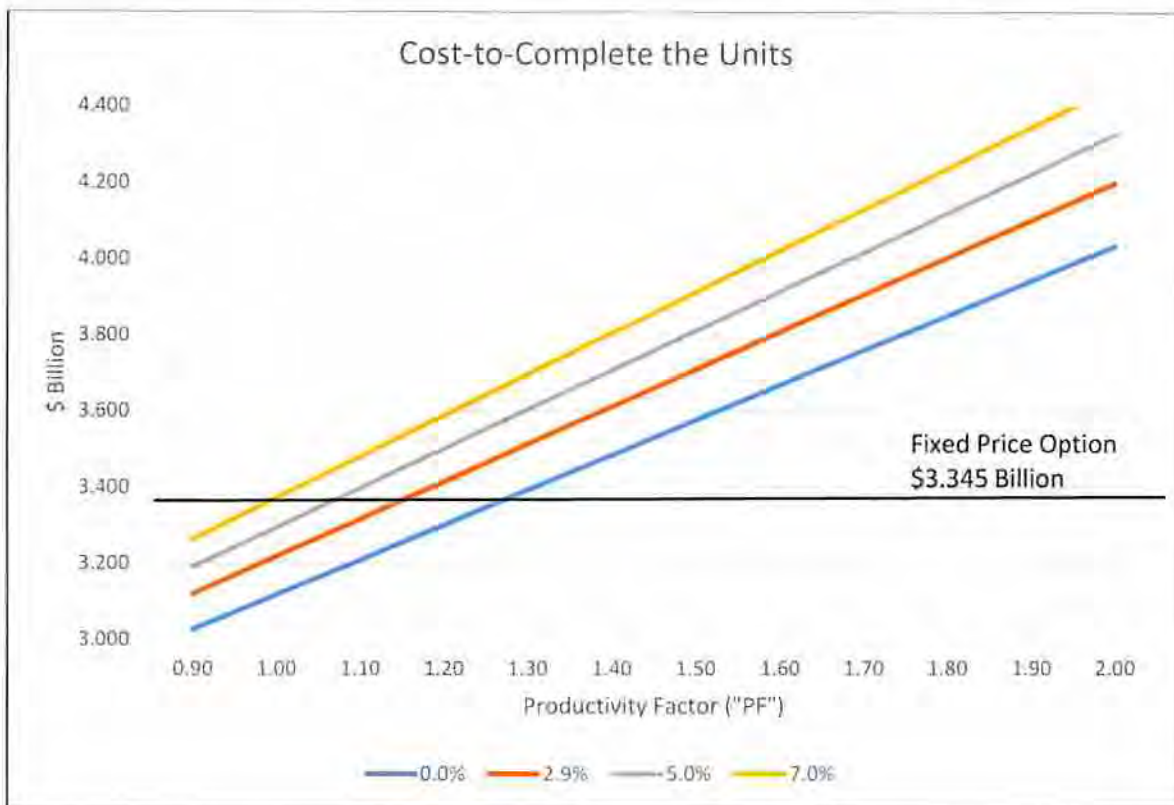
4 **A.** Yes. These are very conservative assumptions in the sense that they are  
5 low compared to historical experience with the project. If these ratios were  
6 higher, the sensitivity study would reflect that the Fixed Price option would be  
7 even more attractive. The historical average ratio of indirect-to-direct hours is  
8 1.21 and of field non-manual-to-direct hours is 1.22. The sensitivity study  
9 assumes that Westinghouse Electric Company, LLC ("Westinghouse") and Fluor  
10 Corporation ("Fluor") will be able to significantly reduce the need for non-direct  
11 labor hours. If they are unable to do so, then the Fixed Price option becomes even  
12 more valuable to SCE&G and its customers.

13 **Q. WHICH PF SCENARIO DOES SCE&G BELIEVE IS THE MOST LIKELY**  
14 **TO OCCUR?**

15 **A.** The cumulative PF for this project through December 2015 is  
16 approximately 1.75. With the reorganization of the Consortium and Fluor coming  
17 onboard, there is ongoing effort to improve the PF of the project. However,  
18 SCE&G believes the most likely PF range will be between 1.50 and 2.00.

1 **Q. CAN THE COST-TO-COMPLETE THE UNITS UNDER THE DIFFERENT**  
 2 **SCENARIOS BE SHOWN GRAPHICALLY?**

3 A. Yes, it can. The following graph depicts the relationship between the cost-  
 4 to-complete on the vertical axis and the PF value on the horizontal axis with a  
 5 reference line being added to show the cost of the Fixed Price option.



6 **Q. WHAT CAN BE CONCLUDED FROM THIS GRAPH?**

7 A. By noting where the reference line for the cost of the Fixed Price option  
 8 crosses each of the cost-to-complete lines, the breakeven value for the PF can be  
 9 observed. For example, under the 2.9% labor cost rate scenario, the cost-to-  
 10 complete is represented by the second line up from the bottom (the red line). The  
 11 breakeven PF value under this scenario is 1.130. This means that if Westinghouse

1 can achieve a PF value less than 1.130 and maintain the labor rates in the base  
2 case scenario, then the Fixed Price option will increase cost to SCE&G's  
3 customers beyond the fixed price. On the other hand if the PF value is greater  
4 than 1.130, then the Fixed Price option lowers costs to SCE&G customers. The  
5 breakeven PF values for the 0%, 2.9%, 5.0%, and 7.0% scenarios are  
6 approximately 1.248, 1.130, 1.049, and 0.976 respectively.

7 **Q. WHAT DO YOU CONCLUDE FROM THE SENSITIVITY STUDY?**

8 A. Table A of the sensitivity study contains the results of the sensitivity study.  
9 For each combination of PF and labor cost growth rate, the table shows the cost-  
10 to-complete the Units as a percentage change to the Fixed Price option. When  
11 focusing on the most likely range of 2.9% to 5.0% in labor rate growth rates and  
12 the PF falling between 1.50 and 2.00, SCE&G estimates that the cost-to-complete  
13 the Units will be between 10.9% and 29.3% higher than the Fixed Price option.  
14 While Westinghouse may be able to make significant improvements over past  
15 performance, SCE&G believes it is in the best interest of its customers to choose  
16 the Fixed Price option and remove the price uncertainty that exists without it.

17 **THE ECONOMIC STUDY**

18 **Q. PLEASE DESCRIBE THE METHODOLOGY USED IN THE ECONOMIC**  
19 **STUDY.**

20 A. The economic study uses the same methodology and structure as the similar  
21 study presented to the Commission in 2015 in Docket No. 2015-103-E. The study  
22 is based on modeling techniques that are widely accepted in the utility industry to

1 determine the relative cost and value of alternative approaches to meeting  
2 customers' electricity needs. The models used in the study include information  
3 about system loads, load shapes (the number of hours each year that specific load  
4 levels are reached), the available units, the ramp rates of units (the speed at which  
5 units can be brought to various levels of production), the availability factors of the  
6 units (how often units are off-line or have mechanical or environmental limits on  
7 their generating capacity), the fuel costs of units (including environmental costs of  
8 burning fuel and disposing of ash or other fuel wastes), the fuel efficiency of units  
9 (how much fuel cost is incurred per megawatt (MW) of energy produced), and the  
10 capital and operating costs of any new units including depreciation, abandonment  
11 costs, salvage cost, production tax credits and other capital related costs or  
12 benefits. Each scenario includes a different set of assumptions about one or more  
13 variables. In this case, the models dispatched the system year-by-year for 40 years  
14 to determine the relative cost to customers under each scenario considered.

15 **Q. WHAT SCENARIOS WERE MODELED?**

16 **A.** The two alternatives—completing construction of the Units compared to  
17 terminating construction of the Units and replacing them with combined-cycle gas  
18 plants—were analyzed under 27 scenarios reflecting different assumptions  
19 concerning natural gas prices, carbon dioxide (“CO<sub>2</sub>”), emissions costs, and future  
20 load growth on our system.

**1 Q. WHAT NATURAL GAS PRICE SCENARIOS WERE MODELED?**

2 A. The three natural gas price scenarios modeled were the Company's base  
3 case forecast of future natural gas prices, a 50% higher gas price and a 100%  
4 higher gas price forecast.

**5 Q. WHY WERE THESE THREE NATURAL GAS PRICE SCENARIOS  
6 CHOSEN?**

7 A. The base case is a forecast that the Company compiles using reported New  
8 York Mercantile Exchange ("NYMEX") gas contracts. Future prices for contracts  
9 for three years are used. Beginning in year four, the forecast escalates the  
10 NYMEX price using escalation rate forecasts provided by IHS.

11 SCE&G uses the base case forecast as a starting point in modeling because  
12 it is simple, objective, and less subject to bias from subjective considerations. But  
13 this is also a limitation. The base case gas price may ignore important factors that  
14 require subjective judgment and are not reflected in current NYMEX prices or in  
15 escalation forecasts. In short, fossil fuel prices, especially natural gas prices, are  
16 notoriously difficult to forecast with confidence. For this reason, SCE&G usually  
17 conducts sensitivity analyses particularly with respect to future natural gas prices.  
18 Therefore, in addition to the base case gas price forecast, two other price scenarios  
19 were developed: one with 50% higher prices than the base case and a second with  
20 100% higher prices. Higher gas prices seem very reasonable when you consider  
21 ongoing and future changes that will put upward pressure on natural gas prices.  
22 The most obvious of these changes include: 1) significantly increased demand in

1 the power generation sector caused by the retirement of coal plants due to the  
2 Environmental Protection Agency's ("EPA") Mercury and Air Toxics Standards,  
3 or MATS, regulations and the Clean Power Plan, as well as the practical inability  
4 to add coal capacity in the future; 2) the opening of the domestic gas market to  
5 higher world prices through liquefied natural gas, or LNG, exportation; 3) the  
6 increasing regulatory scrutiny of "fracking" from an environmental point of view  
7 which will tend to increase the cost of production and reduce the supply of gas;  
8 and 4) the fact that burning natural gas emits CO<sub>2</sub> into the atmosphere and that the  
9 gas industry will likely come under environmental regulations similar to those  
10 crippling the coal industry. The Energy Information Administration ("EIA") in  
11 the early release of their 2016 Annual Energy Outlook provides another scenario  
12 of forecasted natural gas prices and their forecast is shown in the study as a point  
13 of comparison. The EIA forecast closely approximates SCE&G's 50% higher gas  
14 price forecast.

15 **Q. WHAT CO<sub>2</sub> PRICE SCENARIOS WERE MODELED?**

16 **A.** The three variations of CO<sub>2</sub> emission costs were \$0, \$15, and \$30 per ton  
17 starting in 2025 and escalating at 5% per year. While the EPA's Clean Power Plan  
18 is currently subject to a judicial stay, for the purposes of this study, SCE&G  
19 assumed that the EPA's Clean Power Plan goes into effect as written. Under the  
20 scenario of completing the Units, SCE&G assumes that the State of South  
21 Carolina chooses the "rate-based" compliance option in which each electric  
22 generating unit would be required to meet an emission rate target. Under a rate-



1 based compliance plan the new nuclear units would count towards compliance and  
2 would generate sufficient emission rate credits such that SCE&G would not be  
3 required to incur any additional CO<sub>2</sub> compliance costs under the Clean Power  
4 Plan. Therefore the cost of CO<sub>2</sub> emissions to SCE&G and its customers will be  
5 zero.

6 If SCE&G does not complete the Units but instead builds natural gas  
7 combined-cycle plants, then the Company assumes the State will choose the  
8 “mass-based” compliance option where an electric generating unit would be  
9 allocated a CO<sub>2</sub> emission cap. Under this option, SCE&G will be subject to a CO<sub>2</sub>  
10 emission limit and will incur costs to comply. It is uncertain what the cost of CO<sub>2</sub>  
11 emissions will be in the future which is the reason for studying several levels of  
12 cost.

13 If SCE&G does not complete the Units but instead builds natural gas  
14 combined-cycle plants, and if the State should select the rate-based compliance  
15 option (which SCE&G believes to be unlikely in this scenario), then SCE&G and  
16 its customers will be subject to CO<sub>2</sub> emission costs. These costs also will be  
17 substantially greater than they would have been if the State had selected the mass-  
18 based compliance option instead.

19 **Q. WHAT LOAD GROWTH SCENARIOS WERE MODELED?**

20 A. The three load levels considered were the Company’s base case load  
21 forecast and then a low and high forecast which adjusted the forecasted load plus  
22 and minus 5%.

1   **Q.   WHAT IS THE VALUE OF INCLUDING THESE DIFFERENT LOAD**  
2   **GROWTH SCENARIOS?**

3   A.       The load growth scenarios show that varying load up or down 5% does not  
4   significantly affect the value of the scenarios. This is relevant because including  
5   more distributed energy resources (solar generation) or more energy efficiency  
6   gains has the same effect as reducing load growth. Our base case forecast already  
7   includes the impact of currently mandated distributed energy resources and  
8   currently planned energy efficiency investments. There may be other important  
9   reasons to increase investment in these resources. But the study shows that  
10   increasing these resources by a substantial amount does not change the value of  
11   the Units to customers in a meaningful way.

12   **Q.   WHAT WERE THE RESULTS OF THE STUDY?**

13   A.       The study shows that in all 27 scenarios, including base gas price and \$0  
14   carbon costs, the effect of cancelling the Units and switching to natural gas  
15   generation increases the costs to our customers by a significant amount. The most  
16   reasonable scenario is gas prices at base cost plus 50% and CO<sub>2</sub> emissions at \$15  
17   per ton. In that scenario, cancelling the Units and switching to natural gas would  
18   increase the cost to SCE&G's customers for electric service by \$374 million per  
19   year on average over the 40-year planning horizon.

1   **Q.   HAVE YOU ANALYZED THE SENSITIVITY OF RESULTS TO AN**  
2   **INCREASE IN THE COST-TO-COMPLETE THE NUCLEAR UNITS?**

3   **A.           Yes. My analysis is reflected in Exhibit No. \_\_\_\_ (JML-3), which shows,**  
4       **based on current circumstances, the amount nuclear construction costs would need**  
5       **to increase in order to achieve a breakeven point between completing the nuclear**  
6       **project and cancelling it. This study includes the updates to capital costs that are**  
7       **before the Commission in this proceeding. Thus, the total cost of completing the**  
8       **nuclear plants is assumed to be about \$7.67 billion (SCE&G's share of the total**  
9       **cost). Exhibit No. \_\_\_\_ (JML-3) shows how much this cost would have to increase**  
10      **to make the incremental revenue requirements of cancelling the nuclear project**  
11      **equal to those of completing it. The most reasonable scenario reflects base gas**  
12      **cost plus 50% and \$15 per ton CO<sub>2</sub>. In that scenario, the future capital costs of the**  
13      **Units would have to increase by about \$3.83 billion above current forecasts to**  
14      **overcome the benefit of \$374 million per year from completing the Units at their**  
15      **current cost. Stated differently, from where we are today, the total construction**  
16      **cost would have to increase from \$7.67 billion to about \$11.50 billion to reach the**  
17      **breakeven point between the alternatives.**

**CONCLUSION**

**Q. BASED UPON THE STUDIES AND ANALYSES YOU HAVE CONDUCTED IN CONNECTION WITH THIS PROCEEDING, WHAT IS YOUR EXPERT OPINION AS TO WHETHER SCE&G SHOULD SELECT THE FIXED PRICE OPTION?**

**A.** It is my expert opinion that the Company should exercise the Fixed Price option. As reflected in Exhibit No. \_\_\_\_ (JML-1), labor costs will be the principal driver of changes in what Westinghouse could charge SCE&G to complete the project. Given the most likely range of potential variables for labor productivity and labor price rates, the cost to SCE&G and its customers to complete the Units if the Fixed Price option is not chosen will be substantially greater than the Fixed Price option. Rather, the Fixed Price option will save customers between 10.9% and 29.3% of the cost of the project. Accordingly, it is my opinion that the Fixed Price option is reasonable and prudent and that the Company should select this option as being in the best interest of SCE&G and its customers.

**Q. WHAT IS YOUR EXPERT OPINION AS TO WHETHER THE COMPANY SHOULD TERMINATE CONSTRUCTION OF THE UNITS AND PURSUE A NATURAL GAS STRATEGY TO MEET FUTURE GENERATION NEEDS?**

**A.** It is my expert opinion that abandoning construction of the Units at this time and pursuing a natural gas generation strategy for base load generation needs would be imprudent and would result in significantly increased costs to customers.

1       The study presented in Exhibit No. \_\_\_\_ (JML-2) demonstrates that the Company's  
2       nuclear strategy remains the most prudent and lowest cost strategy designed to  
3       meet our customers' needs for base load generation in the future. In fact, based  
4       upon my analysis, completing construction of the Units will result in an estimated  
5       cost savings of \$374 million per year for 40 years. For these reasons, in my  
6       opinion, the Company's most prudent course is to continue constructing the Units  
7       as previously authorized and approved by the Commission.

8   **Q.       DOES THAT CONCLUDE YOUR TESTIMONY?**

9   **A.       Yes, it does.**

**V.C. Summer Units 2 and 3:**  
**Sensitivity Analysis of Potential Price**  
**Outcomes**

**July 1, 2016**

**I. EXECUTIVE SUMMARY**

Pursuant to the Engineering, Procurement and Construction Agreement (the “EPC Contract”), costs that are not subject to fixed or firm pricing are included in the Target category, and approximately 80% of the costs included in this category are for labor costs. Accordingly, labor costs will be the principal driver of changes to the amounts Westinghouse would be permitted to charge SCE&G to complete the two AP1000 units under construction in Jenkinsville, South Carolina (the “Units”).

Changes in labor costs will be caused by two primary factors: 1) the productivity of Direct Craft Labor (which measures the amount of labor required to accomplish particular tasks), and 2) labor price rates (which determine the cost of that labor). This analysis models the sensitivity of project costs to variations in labor productivity ratios and labor price rates across a range of values and on a going forward basis. Not all of the scenarios modeled are equally probable; however, the range they define captures the likely range of variation in these factors.

Under a recent amendment dated October 2015 to the EPC Contract, SCE&G successfully negotiated for and secured the option to fix the price under the EPC Contract for the work needed to complete the Units (“Fixed Price” option) and thereby shift the risk of variable and increasing labor cost to the contractor. The analysis shows that, across the vast majority of the range of potential values for labor productivity and labor price rates, the Cost-to-Complete the Units if the Fixed Price option is not chosen will be greater than if the Company exercises the Fixed Price option. This is uniformly the case

1 for all scenarios falling within the most likely range of values for labor productivity and  
2 labor price.

3 The data presented by this report establishes that, from a purely numerical  
4 standpoint, it is clear that exercising the Fixed Price option is in the best interest of  
5 SCE&G and its customers.

## 6 II. INTRODUCTION

### 7 A. Goals of Report

8 SCE&G and Santee Cooper were successful in negotiating in the 2015 EPC  
9 Amendment the option to fix the EPC Contract price for all payments made on the Units  
10 after June 30, 2015, at approximately \$3.345 billion, exclusive of certain change orders,  
11 including future change orders, and changes in certain Time and Materials costs  
12 categories (the "Cost-to-Complete"). Under the Fixed Price option, the Cost-to-Complete  
13 would increase by approximately \$729 million compared to the projections approved in  
14 Order No. 2015-661.<sup>1</sup> This amount includes the additional costs negotiated in the  
15 October 2015 EPC Contract Amendment (the "Amendment") to settle multiple claims  
16 and to obtain other valuable changes in the EPC Contract.

17 The NND team and the SCANA Resource Planning Department have performed  
18 this analysis in order to assess the potential risks and benefits of exercising the Fixed

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<sup>1</sup> This fixed amount of \$3.345 billion includes all of the fixed or firm and Target costs except a limited amount of work (\$38.3 million) within the Time and Materials component of the EPC Contract price, which SCE&G has reason to believe it can complete for less than the current EPC Target price for this work. The \$3.345 billion also would not include future change orders. While the Amendment reduces the price risk associated with future change orders, there remains a price risk that SCE&G will need to manage whether or not the Fixed Price option is exercised. The same is true of Owner's costs and Transmission costs, which are outside of the EPC Contract and therefore not subject to the Fixed Price option.



1 Price option from a cost perspective. Specifically, the report models 24 scenarios  
2 reflecting different values for the two primary factors driving the Cost-to-Complete. The  
3 goal is to determine under what conditions the Cost-to-Complete is likely to be more or  
4 less than \$3.345 billion in the absence of additional price guarantees. This analysis also  
5 provides numerical data useful to the decision-making process. However, whether or not  
6 to exercise the Fixed Price option requires the exercise of expert business judgment in  
7 light of all the risks and uncertainties.

### 8 **III. THE ASSUMPTIONS UNDERLYING THE ANALYSIS**

#### 9 **A. Identifying the Outcomes to Be Modeled**

10 The first step in assessing likely Costs-to-Complete is to identify the key drivers  
11 that will determine costs for the project to SCE&G. Because most other costs under the  
12 EPC Contract are already fixed or firm costs, the key drivers of future changes in the  
13 Cost-to-Complete will be labor-related costs in the Target Category. Specifically, the  
14 factors that will affect the Cost-to-Complete are Direct Craft Labor productivity, which  
15 will determine the number of labor hours (both direct and indirect) needed to complete  
16 the project, and labor price rates, which will determine the price paid for those hours.

#### 17 **B. The Variables Modeled**

18 Currently, the majority of EPC Contract costs are fixed or firm. These costs  
19 include such items as design and engineering, equipment, components, and commodities.  
20 Approximately 80% of the cost categories that are subject to change, *i.e.*, the Target  
21 categories, are labor-related cost categories including Direct Craft Labor, Indirect Labor,

1 and Field Non-Manual Labor. Therefore, labor costs in these Target cost categories are  
2 likely to drive any variation in the Cost-to-Complete the Units.

3 Labor productivity ratios measure the actual Direct Craft Labor hours expended to  
4 complete each scope of work compared to the labor hours budgeted to do so and changes  
5 in labor productivity ratios reflect the changes in the number of Direct Craft Labor hours  
6 needed to complete the project. Variations in the number of Direct Craft Labor hours is  
7 the principal driver of the required hours of Indirect Labor (on-site support services) and  
8 Field Non-Manual Labor (clerical, field engineering, Quality Assurance and Quality  
9 Control, supervisory and safety) needed to support Direct Craft Labor. Therefore,  
10 changes in Direct Craft productivity rates will directly impact the number of hours  
11 required to complete the project in Indirect Labor and Field Non-Manual categories.<sup>2</sup>

12 Labor rates, including benefits and overhead, are applied to the budget for labor  
13 hours to determine the estimated labor-related cost of the work. Labor rates also include  
14 cost allowances per hours worked for consumable materials, tools, personal safety  
15 equipment, and craft labor per diem.

#### 16 **1. Direct Labor Productivity Factor ("PF")**

17 The first step in determining the labor cost for a particular project is to determine  
18 the units of labor required to complete the scopes of work that comprise the project.  
19 There are several steps to this process.

---

<sup>2</sup> The ratios of Indirect Labor hours and Field Non-Manual Labor hours to Direct Craft hours were held constant in this analysis to focus on the sensitivity of the outcomes to the two primary factors.

**a. Units of Labor**

Construction estimators use standard units of labor to estimate the cost of installing specified quantities of commodities such as concrete, rebar, pipe, valves, or conduit; terminating specified quantities of electrical lines or communication lines; or installing specified quantities of structural steel, steel flooring, stairways, or lighting. These units of labor are tied to the size and specifications of the commodities in question and the general conditions of the installation (*e.g.*, is the installation completed while on scaffolding, on the ground, aligned vertically or horizontally, etc.). The quantities of commodities are calculated as take-offs from the engineering documents for the project. Estimators then apply standard units of labor to those quantities to create an initial budget of labor hours.

**b. Productivity Factors**

Estimators apply PFs to the initial budget of labor hours to account for the anticipated conditions on a particular job site. A projected PF of 1.0 indicates that the work on that site is anticipated to require the standard number of labor hours. A PF of 1.10 indicates that it will require 10% more hours than the standard estimate to accomplish the work on that site. Applying PFs to the initial budget of labor hours creates a site-specific budget of labor hours for the project.

**c. PFs Underlying the Current Cost Forecast**

Westinghouse's estimate of the Cost-to-Complete the Units as reflected in Order No. 2015-661 was computed using a PF of 1.15 for Direct Craft Labor. Thus,

1 Westinghouse was assuming it would take 15% more hours than originally budgeted for  
2 the Direct Craft Labor to complete the project.

3 If at the end of the project, 25% more Direct Craft Labor was required than was  
4 budgeted, the project will show a PF of 1.25 at completion. Similarly, if 100% more  
5 Direct Craft Labor is required than was budgeted, the PF at completion of the project will  
6 be 2.00.

7 The factors that could increase Direct Craft Labor productivity include such things  
8 as regulatory delays, quality issues, component delays, design changes, weather,  
9 contractor inefficiency, rework, or schedule mitigation cost. Each of these factors, if  
10 realized, will increase the labor hours needed to complete the Units. This increase will be  
11 expressed in higher labor PFs. It is therefore possible to analyze the effect of all of the  
12 important non-price factors that drive project labor costs by varying labor PFs.

13 **d. Selecting PF Ranges for Modeling**

14 To conduct a sensitivity analysis related to the Cost-to-Complete the Project, our  
15 team modeled Direct Craft Labor PFs of 1.00, 1.15, 1.25, 1.50, 1.75, and 2.00. These  
16 factors are measured over the remaining life of the project and, therefore, encompass any  
17 future productivity improvements made by Westinghouse and Fluor as they seek to  
18 improve the efficiency and effectiveness of their design and construction efforts. They  
19 also encompass unanticipated difficulties with the project that could increase the units of  
20 labor required.

21 The 1.00 PF is the PF that was included in the original cost projections for the  
22 project, chosen by the Consortium, and based on the expectation that modular

Exhibit No. \_\_ (JML-1)

1 construction would allow a nuclear project to achieve the productivity rates achieved in  
2 non-nuclear projects. To date, this anticipated level of efficiency has not been attained  
3 and the productivity constraints have been significant. Even so, the 1.00 PF was chosen  
4 as a lower bound to the sensitivity analysis because it is the judgment of the NND team,  
5 based on their experience with the project to date, that the chance of achieving a PF of  
6 1.00 or less over the remaining life of the project is remote.

7 The 1.15 PF is the factor on which the Consortium computed the estimate of the  
8 Cost-to-Complete that is reflected in Order No. 2015-661. Based on current productivity  
9 rates, it will require a great deal of improvement for Westinghouse and Fluor to achieve a  
10 1.15 PF going forward. This is particularly true because of the constraints of the current  
11 schedule. Mitigation likely will be required to meet current schedule commitments,  
12 which would typically involve additional labor and therefore less favorable labor  
13 productivity rates.

14 The 1.25, 1.50, and 1.75 PFs have been chosen to show the sensitivity of the Cost-  
15 to-Complete to movements in direct labor productivity from the floor of 1.00. The 2.00  
16 PF is the highest leveled modeled. The 2.00 PF assumes that Westinghouse adds nearly  
17 double the amount of labor originally anticipated being required to complete the project  
18 on time. Because SCE&G believes that it is unlikely that it would require significantly  
19 more labor than represented by a 2.00 labor factor to complete the project, this PF has  
20 been chosen as the upper bound of the sensitivity analysis. Given what SCE&G knows  
21 today about the project, its leadership, and the plans for productivity improvements,

1 SCE&G would expect the PF for the project to fall somewhere in the range of 1.50 to  
2 2.00.

## 3 **2. Labor Prices**

4 Changes in wage and benefit rates can drive shifts in labor costs even if the  
5 number of labor hours required otherwise remains the same. To conduct a sensitivity  
6 analysis related to Direct Craft Labor, this analysis models labor cost growth rates of 0%,  
7 2.9%, 5.0%, and 7.0% over the study period.

8 It is the considered judgment of the NND team and the Resource Planning  
9 Department that the likelihood of the labor cost growth rate equaling the extreme values  
10 of 0% or 7.0% is small. It is also the considered judgment of the NND team and the  
11 Resource Planning Department that it is most likely that labor cost deviations will fall  
12 between 2.9% and 5.0%. Under a “business as usual” assumption, the 2.9% growth rate  
13 would represent a reasonable forecast since it is the 5-year compound growth rate in the  
14 Handy-Whitman cost index in the “All Steam & Nuclear” category for the South Atlantic  
15 region of the country. Coincidentally, it also is the 5-year growth rate in construction  
16 labor costs projected by IHS over the period 2016-2020 averaged over several categories  
17 of labor, again, for the South Atlantic region of the country. However SCE&G believes  
18 that 2.9% may be too low because of the need for night time work which should  
19 command a premium in the market and also the tightness in the skilled labor force.

## 20 **IV. RESULTS OF THE ANALYSIS**

21 Computing the Cost-to-Complete using each possible combination of these factors  
22 resulted in data for 24 different scenarios. As presented in Table A below, these

scenarios reflect the percentages by which the ultimate Cost-to-Complete the Units would exceed the cost under the Fixed Price option. Wherever the numbers are positive, customers would be expected to save that percentage of the total cost of project as a result of SCE&G exercising the Fixed Price option.

TABLE A

**Sensitivity of the Project to Cost Changes**  
**Due to Variations in Craft Labor Productivity Factors and Labor Cost Growth Rate**  
 (Percent change in total EPC Contract cost compared to the Fixed Price option)

	Labor Cost Growth Rate (%)			
Productivity Factor	0%	2.9%	5.0%	7.0%
1.00	-6.8	-3.8	-1.5	0.8
1.15	-2.7	0.6	3.1	5.6
1.25	0.1	3.5	6.2	8.9
1.50	6.9	10.9	13.9	17
1.75	13.7	18.2	21.6	25
2.00	20.6	25.5	29.3	33.1

Raw numerical results for these scenarios are attached as **Appendix A**.

The most likely scenarios are those in the cells which give the result for PFs of 1.50, 1.75, and 2.00, and labor cost growth rates of 2.9% and 5.0%. They show that within this range of values the total Cost-to-Complete the Units would be greater than the Fixed Price option by between 10.9% and 29.3%.

**V. CONCLUSION**

Based on the range of values for Direct Craft Labor productivity and labor cost deviations modeled here, it is likely that the Fixed Price option will save customers between 10.9% and 29.3% of the cost of the project. Of the 24 scenarios modeled, only four show that accepting the Fixed Price option would result in higher costs to customers. Those four scenarios involved PFs or labor cost growth rates at the lower bound of the analysis, scenarios that the NND team and Resource Planning Department consider to be unlikely. While there are many other factors and benefits to be considered, the results of this sensitivity analysis provide clear numerical support for the prudence of exercising the Fixed Price option.



## Appendix A: Tabular Results

**Total Project Costs Due to Variations in Craft Labor Productivity Factors and  
Labor Cost Growth Rate (\$000,000)**

	Labor Cost Growth Rate			
Productivity Factor	0%	2.9%	5.0%	7.0%
1.00	\$3,118	\$3,218	\$3,295	\$3,371
1.15	\$3,255	\$3,365	\$3,449	\$3,533
1.25	\$3,347	\$3,463	\$3,552	\$3,642
1.50	\$3,576	\$3,709	\$3,810	\$3,912
1.75	\$3,805	\$3,954	\$4,068	\$4,183
2.00	\$4,033	\$4,199	\$4,326	\$4,453

Exhibit No. \_\_ (JML-1)

## Appendix B: Tabular Results

**Total Project Costs Less Fixed Price Option Cost of \$3,345 Million Due to  
Variations in Craft Labor Productivity Factors and Labor Cost Growth Rate**  
**(\$000,000)**

	Labor Cost Growth Rate			
Productivity Factor	0%	2.9%	5.0%	7.0%
1.00	(\$227)	(\$127)	(\$51)	\$26
1.15	(\$90)	\$20	\$104	\$188
1.25	\$2	\$118	\$207	\$297
1.50	\$231	\$363	\$465	\$567
1.75	\$460	\$609	\$723	\$838
2.00	\$688	\$854	\$981	\$1,108

**Comparative Economic  
Analysis of  
Completing Nuclear  
Construction  
or  
Pursuing a Natural Gas  
Resource Strategy**

**July 1, 2016**



## Introduction

The purpose of this study is to determine if abandoning SCE&G's ongoing nuclear construction program and pursuing a natural gas generation strategy for base load generation needs would benefit retail customers in terms of long-run revenue requirements. SCE&G's management directed the Resource Planning Department to use current data to prepare generation cost studies comparable to those performed in 2008 that supported the original decision to construct the two nuclear units (the "Units").

SCE&G has undertaken this exercise expressly reaffirming its position that no single analysis of comparative costs underlies its choice of nuclear generation over gas-fired generation alternatives. The goal of base load generation planning is to create a diverse and flexible portfolio of generation units that can perform effectively in multiple sets of conditions over 40 years or more. No single study or series of studies is an effective substitute for informed business judgment exercised with this goal in mind.

This study calculates the incremental revenue requirements on a comparative basis for two strategies. The first is the base case which involves completing the two nuclear units which are presently under construction and scheduled to go into service in 2019 and 2020. When completed, the Units together will provide SCE&G with 1,229 MW. The second strategy is the natural gas resource strategy in which the Units are cancelled at the effective date of December 31, 2016. The Units are replaced by two combined-cycle units rated at 614 MWs each which come into service in 2019 and 2020 also.

The principal components of the study and conclusion are set forth below. The inputs to the study have been updated to reflect the most current values available.

## Load Forecast and Resource Plans

To compute the revenue requirements of the two strategies over a 40-year planning horizon, the study relies on the load forecast data that were reported in summary form in SCE&G's 2016 Integrated Resource Plan. These load forecasts are updated versions of those that were used in the 2008 planning studies (the "2008 Studies") on which the original Base Load Review Act ("BLRA") order was based. Both the nuclear and gas resource strategies are measured against identical load forecasts.

Appendix I shows the forecast and the base case scenario resource plan. Both the nuclear capacity and the natural gas combined-cycle capacity are shown on the alternative versions of the resource plan as "base load" capacity entered on line 9 in the table shown in Appendix I. As was the case with the 2008 Studies, the resource plans for each of the two strategies assumed that, after the base load capacity was added, additional simple-cycle natural gas-fired generation was added to meet subsequent load growth. Comparable amounts of simple-cycle generation with comparable capital cost and operating costs were added under each strategy.

## **Abandoning Nuclear Construction**

As of December 31, 2016, SCE&G expects to have spent \$4.607 billion on construction of the Units. If SCE&G were to decide to cancel the nuclear construction project, it would be subject to contractual cancellation charges, site decommissioning and stabilization expenses and other abandonment expenses in addition to the \$4.607 billion that would already have been spent. SCE&G's best assessment of the amount of those cancellation expenses would be \$262 million for a cancellation effective December 31, 2016. This is the cost on a 100% basis (i.e., including Santee Cooper's 45% share in expenses).

Upon cancellation of the project, SCE&G could scrap, sell or salvage certain materials, equipment and work in progress and could use the proceeds to off-set some part of the abandonment expenses. A large component of the spending to date, however, has been for site work, construction of roads, building and bridges on site, the hiring and training of personnel, design and procurement work, and other activities that do not produce salvageable materials. SCE&G estimates that of the amounts spent to date, the salvage value of materials, equipment, and work in progress would be approximately \$318 million on a 100% basis. This \$318 million would be netted against the gross cancellation cost of \$262 million to produce an estimate of the net cancellation benefit, not considering the \$4.607 billion already spent, of \$56 million, again on a 100% basis. SCE&G's customers would receive the benefit of 55% of this or \$31 million.

Thus, subtracting the net cancellation gain of \$31 million from the \$4.607 billion spent as of December 31, 2016, produces a total abandonment cost of \$4.576 billion.

The model used for comparing the costs of these two strategies computes a levelized cost for capital invested that includes all relevant parameters given the nature of the asset involved. This combination of costs spent to date and additional cost to abandon the project represent a cost that must be borne by the gas resource strategy.

## **Benefit of a Balanced Capacity Portfolio**

A significant advantage of continuing construction of the two nuclear units is that once added to SCE&G's generation fleet, the Units will produce a well-balanced capacity portfolio. The following charts show the percent distribution of capacity under a plan of continuing nuclear construction and the alternative of replacing it with natural gas-fired capacity.

Exhibit No. \_\_ (JML-2)

**CHART A**

Chart A shows that the Natural Gas Strategy produces a generation system that in 2021 relies on fossil fuels for 75.2% of its generating capacity. The Nuclear Strategy creates a more balanced portfolio. Such a portfolio better protects customers from unexpectedly high costs in any one fuel source while allowing the utility to take advantage of opportunities in others.

### Price of Natural Gas

Chart B shows two forecasts of natural gas prices at the Henry Hub. One is the current Energy Information Administration (“EIA”) natural gas forecast reported in their 2016 Annual Energy Outlook (“AEO”). The second is the proprietary natural gas forecast that SCE&G uses for planning purposes. To develop this forecast, SCE&G uses the forward prices reported for the NYMEX futures contracts over the next three years (i.e., through the end of 2018) and then applies an escalation factor projected by the economic forecasting firm IHS Global Insight, Inc. to forecast prices beyond three years in the future. This is a methodology that SCE&G has used for a number of years to produce gas forecasts for planning studies. The value of this methodology is that it is simple and objective. However, because all forecasts of future gas prices are subject to error, SCE&G typically tests the results of these studies done using these forecasts through sensitivity analyses that model variations in gas prices.

The SCE&G natural gas price forecast is the lowest of the forecasts reported on Charts B and G. It is the forecast used in these studies as the base case value for future gas prices. Charts B and C compare SCE&G baseline natural gas price forecast to the EIA’s forecast that was provided in their 2016 AEO.

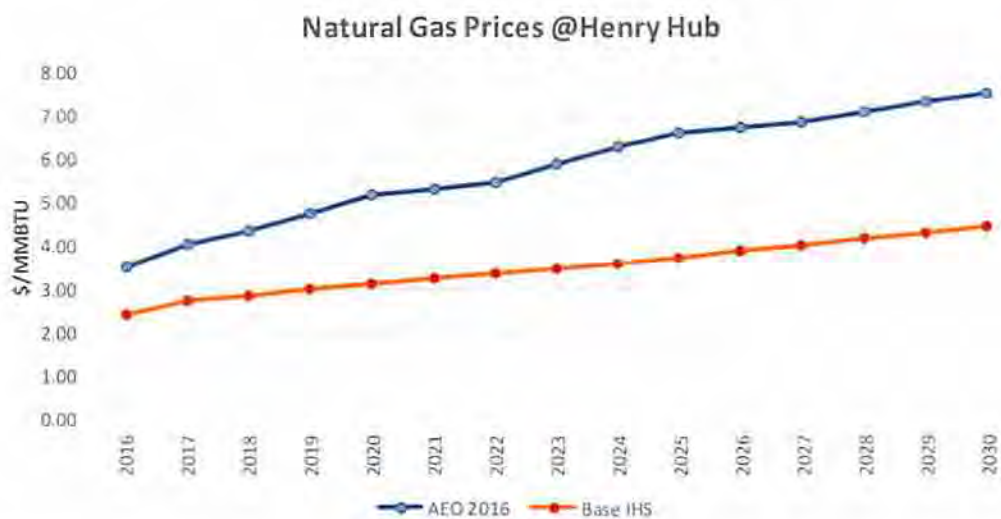
**CHART B**

	Natural Gas Price Forecasts @Henry Hub (\$ per MMBTU)						
	2016	2017	2018	2019	2020	2030	2035
SCEG Baseline	2.41	2.74	2.88	2.98	3.08	4.32	5.11
EIA 2016 Forecast	3.53	4.04	4.37	4.74	5.18	7.54	8.13



Chart C graph compares SCE&G's baseline forecast to that of the EIA.

### CHART C



### Social Cost of Carbon

In 2009, the Obama Administration convened a group of federal agencies to establish a social cost for carbon dioxide ("CO<sub>2</sub>") to be used in future rulemaking by federal agencies. In 2010, this interagency committee published its first social cost of carbon ("SCC"), a monetized value associated with the cost of emitting a ton of CO<sub>2</sub>. In 2013, the interagency working group published an updated report with new estimates of the social cost of carbon.<sup>1</sup> Following is a copy of a table from the government's report on SCC estimates summarizing their results:

[CHART D IS ON FOLLOWING PAGE]

<sup>1</sup> Whitehouse Report: "Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866"  
[https://www.whitehouse.gov/sites/default/files/omb/inforeg/social\\_cost\\_of\\_carbon\\_for\\_ria\\_2013\\_update.pdf](https://www.whitehouse.gov/sites/default/files/omb/inforeg/social_cost_of_carbon_for_ria_2013_update.pdf)

**CHART D**Revised Social Cost of CO<sub>2</sub>, 2010 – 2050 [in 2007 dollars per metric ton of CO<sub>2</sub>]

Discount Rate	5.0%	3.0%	2.5%	3.0%
Year	Avg	Avg	Avg	95th
2010	11	33	52	90
2015	12	38	58	109
2020	12	43	65	129
2025	14	48	70	144
2030	16	52	76	159
2035	19	57	81	176
2040	21	62	87	192
2045	24	66	92	206
2050	27	71	98	221

The cost of carbon emissions shown in the above table are stated in 2007 dollars. The following table restates the costs in nominal dollars assuming an inflation rate of 2% and includes the costs used in SCE&G's study.

**CHART E**

Discount Rate	Social Cost of CO <sub>2</sub> in Nominal Dollars				SCE&G's Study	
	5.0%	3.0%	2.5%	3.0%	\$15/Ton	\$30/ton
Year	Avg	Avg	Avg	95th		
2010	12	35	55	96		
2015	14	45	68	128		
2020	16	56	84	167		
2025	20	69	100	206	\$15	\$30
2030	25	82	120	251	\$19	\$38
2035	33	99	141	306	\$24	\$49
2040	40	119	167	369	\$31	\$62
2045	51	140	195	437	\$40	\$80
2050	63	166	230	518	\$51	\$102

SCE&G's scenario of \$15 per ton is very close to the lowest government estimates for SCC based on a social discount rate of 5.0%. Both of SCE&G's scenarios, the \$15 and \$30 scenarios, are below the SCC values recommended for government use, *i.e.*, those based on a 3.0% discount rate and are well below the high estimates based on a 2.5% social discount rate and the 95<sup>th</sup> percentile in the 3.0% discount case.

**The Clean Power Plan**

In August 2015 the Environmental Protection Agency ("EPA") published its Clean Power Plan under which the emissions of CO<sub>2</sub> by certain fossil generating plants would be regulated. The EPA established emission targets for each state covered by regulations issued under Section 111(d) of the Federal Clean Air Act and has proposed various pathways for each state to comply with those targets. Those pathways include a "rate-based" compliance plan, wherein each electric generating unit ("EGU") would be required to meet an emission rate target.



Alternatively, a state may select a “mass-based” compliance plan, in which an EGU would be allocated a CO<sub>2</sub> emission cap. In both the rate and mass-based plans, EGUs would have the opportunity to trade credits or allocations to assist in meeting those targets. Under a rate-based compliance plan the new nuclear units would count towards compliance and would generate sufficient emission rate credits that SCE&G would not be required to incur any additional CO<sub>2</sub> compliance costs under the Clean Power Plan. On the other hand, if the new nuclear units are not built then SCE&G would be subject to a CO<sub>2</sub> emissions limit and incur costs to comply. In this study then it was assumed under the new nuclear scenario, SCE&G’s CO<sub>2</sub> costs would be \$0 while under the natural gas scenario, the CO<sub>2</sub> costs would be either \$0, \$15, or \$30 per ton.<sup>2</sup>

### Capital Costs and Operating Costs of Natural Gas Capacity

The gas resource strategy relies on combined-cycle plants for additional base load generation. As mentioned above, both the nuclear and natural gas resource strategies add simple-cycle combustion turbines as required to meet additional capacity needs. Chart F contains the costs and heat rates assumed for these units in 2016 dollars. These inputs are based on SCE&G’s ongoing monitoring of equipment and construction prices and are verified through reviews of published prices and vendor discussions. They reflect current costs to engineer, procure, and construct the assets in question.

**CHART F**

Gas Technology	Capacity Rating MW	Construction Cost \$/KW	Heat Rate BTU/KWH	Fixed O&M Per Year	Variable O&M Per MWH
Simple-Cycle	93	\$754	9,169	\$708,690	\$1.36
Combined-Cycle	614	\$1,105	6,862	\$9,009,299	\$1.29

### Miscellaneous Inputs

In this study, all carrying costs on capital investments are calculated including taxes, depreciation, insurance, and cost of capital as applicable to the type of asset in question. Fixed and variable O&M include current estimates of turbine maintenance costs for combined-cycle units. Nuclear production tax credits have been updated. Nuclear fuel costs are based on current forecasts of uranium prices and prices of new fuel assembly fabrication.

### Scenario Analysis

In this study, the nuclear strategy and the natural gas resource strategies were studied under 27 different scenarios: three different natural gas prices, three different costs per ton of CO<sub>2</sub> emitted, and three different levels of load on SCE&G’s system.

**a. Natural Gas Price Scenarios** - The natural gas scenarios included the base line forecast of future natural gas prices as previously discussed as well as prices reflecting a 50%

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<sup>2</sup> On February 9, 2016, the Supreme Court stayed the rule pending disposition of a petition of review of the rule in the United States Court of Appeals for the D.C. Circuit.

## Exhibit No. \_\_ (JML-2)

and 100% increase in the base line forecast. These three gas scenarios quantify the sensitivity of the analysis to variable natural gas prices. Chart G shows the natural gas price for each scenario for several years in the forecast period, as well as EIA's projection for reference.

**CHART G**

<b>Natural Gas Price Forecasts @Henry Hub (\$ per MMBTU)</b>							
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2030</b>	<b>2035</b>
<b>SCEG Baseline</b>	2.41	2.74	2.88	2.98	3.08	4.32	5.11
<b>50% Higher Scenario</b>	3.61	4.11	4.32	4.48	4.62	6.47	7.66
<b>100% Higher Scenario</b>	4.81	5.49	5.76	5.97	6.16	8.63	10.22
<b>EIA 2016 Forecast</b>	3.53	4.04	4.37	4.74	5.18	7.54	8.13

**b. CO<sub>2</sub> Cost Scenarios** – In light of current national environmental policies, it is clear that there will be a cost associated with the emissions of CO<sub>2</sub> in the future. It remains to be seen whether or not a fully-fledged cap and trade system will ultimately develop. In any case utilities will incur costs to lower their emissions of CO<sub>2</sub>, certainly in the uneconomic dispatch of their generation fleets and probably through the early retirement of coal units and new investment in replacement capacity. In the present study there were three CO<sub>2</sub> cost scenarios used: \$0, \$15, and \$30 per ton beginning in 2025 and escalating at 5%.

CO<sub>2</sub> costs at \$0 per ton are not a realistic expectation for the long term. However, the \$0 per ton CO<sub>2</sub> scenario provides a useful lower bound to test the sensitivity of the study to this input. The scenarios with \$15 and \$30 per ton will provide a sensitivity to the emissions cost. Both numbers are below the SCC set by the government as mentioned previously.

**c. Load Forecast Scenarios** - Three scenarios representing variations of the base case load forecast scenarios were modeled. They included the base case forecast and load forecast scenarios where the load was 5% higher and 5% lower than the base case. These higher and lower load scenarios were modeled to test the sensitivity of the analysis to variability in load due to factors such as increased economic activity or increased rates of energy conservation. The 5% plus or minus load scenarios provide for a reasonable assessment of possible variation in load on the system.

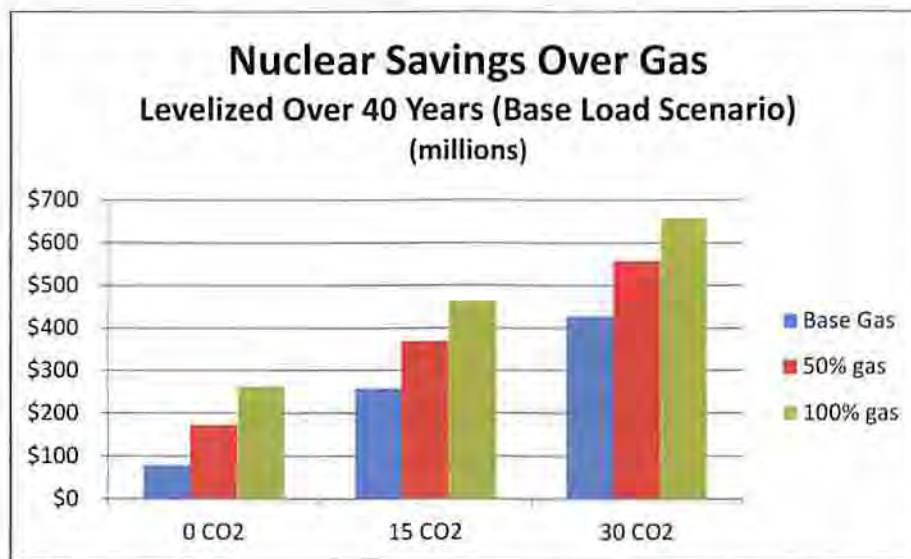
**Dispatch Modeling**

The results used in each of the 54 combinations of 27 scenarios and 2 generation strategies is derived from a simulation of the generation system dispatch using the PROSYM dispatch model. The PROSYM model is licensed from ABB and is widely used in the utility industry. This model determined how each generation resource on the system would be dispatched under each scenario over the 40-year planning horizon. Modeling the dispatch of the system using the PROSYM model produced both fuel cost and variable O&M costs for each scenario for each of the 40 years of the planning period. These fuel costs and variable O&M costs generated by the PROSYM model were then combined with the capital costs and other fixed costs for each scenario to determine a levelized annual cost for each of the 27 scenarios over the 40-year planning horizon.

## Scenario Results

The results of the modeling are set forth below in Chart H. This chart shows the savings from continuing to construct the Units based on three sets of assumptions as to future gas prices, and based on CO<sub>2</sub> costs of \$0, \$15, and \$30 evaluated against SCE&G's base case scenario for future load. SCE&G believes that the most reasonable scenario for planning purposes is the scenario that models a \$15 CO<sub>2</sub> cost and gas prices that are 50% higher than the current SCE&G gas forecast. That analysis shows that the nuclear strategy is less costly than gas by a levelized amount of \$374 million per year for 40 years.

### CHART H



The numerical results of the scenarios shown in Chart H are set forth in Chart I below:

### CHART I

#### Base Load Scenario

Benefit of Nuclear Strategy over the Gas Strategy Levelized Present Worth of Change in Revenue Requirements Over 40 Years (millions)			
	Base Gas	50% Higher Gas	100% Higher Gas
\$0 CO <sub>2</sub> Price	\$84	\$177	\$269
\$15 CO <sub>2</sub> Price	\$263	\$374	\$468
\$30 CO <sub>2</sub> Price	\$433	\$562	\$663

This Chart highlights several critical points. First, completing the nuclear construction program is more economical than switching to a gas resource strategy across all scenarios modeled. In not one case is gas less costly than nuclear. The lowest level of nuclear advantage

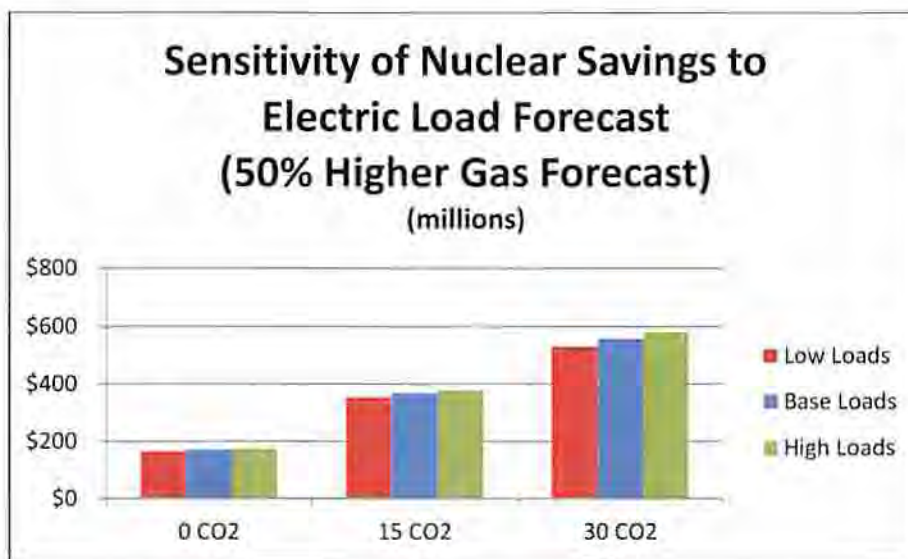
## Exhibit No. \_\_ (JML-2)

is a levelized annual advantage of approximately \$84 million per year. This occurs using base gas price assumptions and CO<sub>2</sub> prices at \$0 per ton. In the 2008 Studies, the \$0 per ton CO<sub>2</sub> scenario with low gas prices resulted in nuclear being more costly than gas by \$44 million.

In this series of scenarios, the nuclear strategy had the highest cost advantage over gas in the 100% Higher Gas scenario with a \$30 per ton CO<sub>2</sub> price under the high load scenario. In that scenario, the nuclear strategy was more cost effective than the gas resource strategy by a levelized amount of \$689 million per year. As mentioned above, the scenario with the set of assumptions that SCE&G believes to be most reasonable for planning purposes is 50% higher gas prices with \$15 per ton CO<sub>2</sub> where nuclear has a cost advantage over gas of \$374 million per year.

Studies were run with different assumptions as to future levels of system load to determine whether the studies' results were sensitive to changes in future electric load forecasts. Chart J shows results calculated using the base load forecast side by side with results calculated using load forecasts that have been increased by 5% and decreased by 5%. The chart shows very little variability in results based on changes in the load forecast.

**CHART J**



The scenario results reported on Chart J are for the 50% Higher Gas scenario. The Base Gas and 100% Higher Gas scenarios were modeled in the same way. The resulting charts are attached as Appendix 2 and the underlying data is attached as Appendix 3. They show a similar alignment of results. Collectively, these charts show that the cost advantage of the nuclear strategy over the natural gas resource strategy is consistent whether electric loads are greater or less than anticipated in the future.

There are several other inferences that can be drawn from these results of testing the nuclear and the gas resource strategies across these 27 scenarios. First, the advantage that the nuclear strategy has over the gas strategy is not dependent on load growth forecasts. Forecasts for load growth are currently very low. But even if the current load growth projections turn out

**Exhibit No. \_\_ (JML-2)**

to be high because of Demand Side Management, energy efficiency, or distributed or alternative generation, the nuclear advantage is not materially reduced.

Second, the study shows that the comparative economics of the nuclear and natural gas resource strategies swing widely based on gas price forecasts and future CO<sub>2</sub> cost assumptions. This shows that the economics of the gas resource strategy are very sensitive to swings in natural gas prices and CO<sub>2</sub> costs. This confirms that a resource strategy dependent of natural gas generation significantly increases SCE&G's exposure to fossil-fuel price volatility and environmental cost increases.

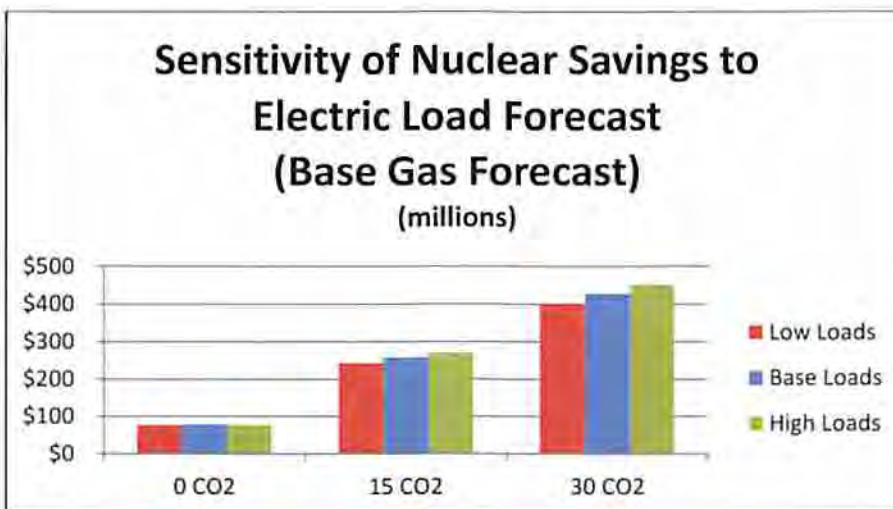
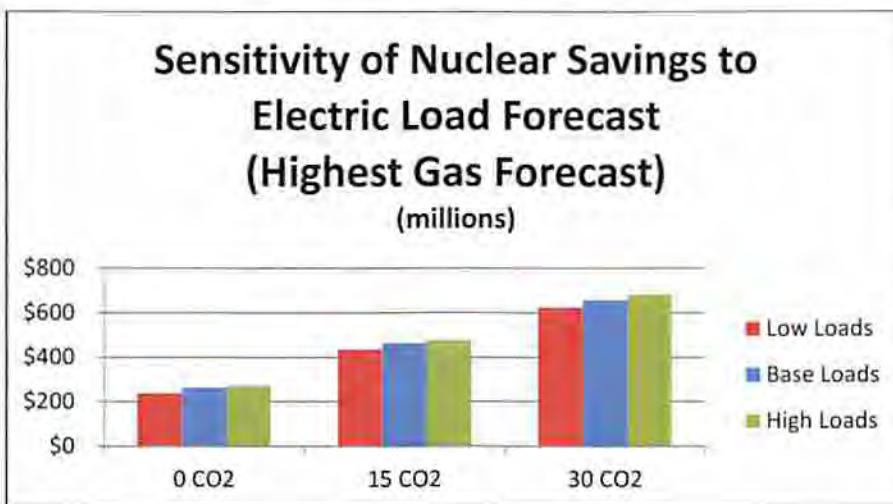
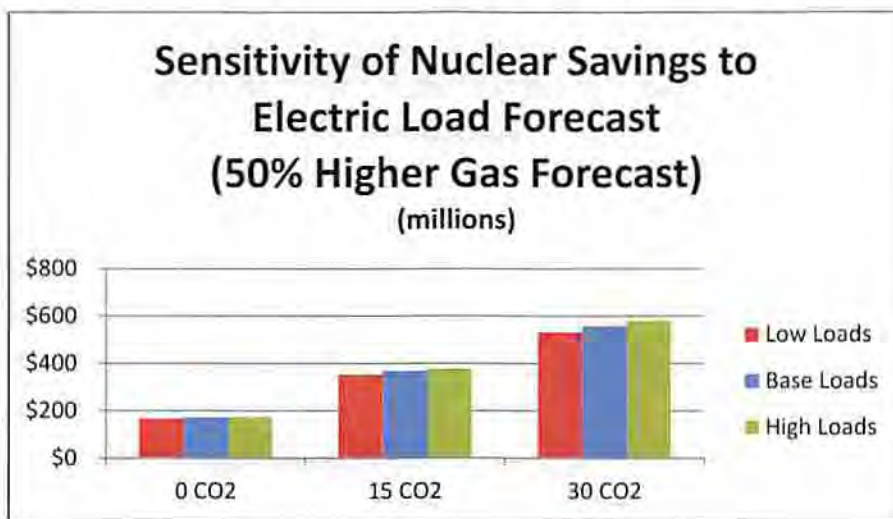
## **Conclusion**

The results of this study demonstrate through the use of a full system dispatch model, run over a 40-year planning cycle, and using updated information on relevant parameters that the nuclear strategy remains the strategy best able to provide favorable results over a broad range of future operating conditions. The most reasonable estimate of the cost advantage of completing the Units is \$374 million per year for 40 years.



Exhibit No. \_\_ (JML-2)  
Appendix I

		SCE&G Forecast of Summer Loads and Resources														
		(MW)														
	<u>YEAR</u>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Load Forecast</b>																
1	Baseline Trend	5031	5133	5293	5431	5582	5721	5837	5948	6047	6136	6230	6318	6403	6495	6583
2	EE Impact	-8	-13	-26	-45	-63	-82	-101	-120	-140	-160	-180	-201	-223	-244	-265
3	Gross Territorial Peak	5023	5120	5267	5386	5519	5639	5736	5828	5907	5976	6050	6117	6180	6251	6318
4	Demand Response	-257	-260	-268	-272	-274	-277	-279	-281	-284	-286	-289	-291	-294	-297	-299
5	Net Territorial Peak	4766	4860	4999	5114	5245	5362	5457	5547	5623	5690	5761	5826	5886	5954	6019
<b>System Capacity</b>																
6	Existing	5282	5307	5336	5376	5421	6035	6649	6649	6649	6649	6649	6649	6649	6649	6742
	Additions:															
7	Solar Plant	25	29	40	45											
8	Peaking/Intermediate														93	93
9	Baseload					614	614									
10	Retirements															
11	Total System Capacity	5307	5336	5376	5421	6035	6649	6649	6649	6649	6649	6649	6649	6649	6742	6835
12	Firm Annual Purchase	300	225	325	425											
13	Total Production Capability	5607	5561	5701	5846	6035	6649	6649	6649	6649	6649	6649	6649	6649	6742	6835
<b>Reserves</b>																
14	Margin (L13-L5)	841	701	702	732	790	1287	1192	1102	1026	959	888	823	763	788	816
15	% Reserve Margin (L14/L5)	17.6%	14.4%	14.0%	14.3%	15.1%	24.0%	21.8%	19.9%	18.2%	16.9%	15.4%	14.1%	13.0%	13.2%	13.6%

**Sensitivity of Nuclear Savings to Electric Load Forecast**

**Benefit of Nuclear Strategy over the Gas Strategy  
Levelized Present Worth of Change in  
Revenue Requirements Over 40 Years  
(millions)**

**Base Load Scenario**

	<b>Base Gas</b>	<b>50% Higher Gas</b>	<b>100% Higher Gas</b>
<b>\$0 CO2 Price</b>	\$84	\$177	\$269
<b>\$15 CO2 Price</b>	\$263	\$374	\$468
<b>\$30 CO2 Price</b>	\$433	\$562	\$663

**High Load Scenario**

	<b>Base Gas</b>	<b>50% Higher Gas</b>	<b>100% Higher Gas</b>
<b>\$0 CO2 Price</b>	\$83	\$180	\$278
<b>\$15 CO2 Price</b>	\$276	\$384	\$483
<b>\$30 CO2 Price</b>	\$457	\$586	\$689

**Low Load Scenario**

	<b>Base Gas</b>	<b>50% Higher Gas</b>	<b>100% Higher Gas</b>
<b>\$0 CO2 Price</b>	\$82	\$172	\$242
<b>\$15 CO2 Price</b>	\$248	\$359	\$441
<b>\$30 CO2 Price</b>	\$407	\$536	\$629



**Increase in Capital Costs of Nuclear Strategy Needed for Breakeven  
with Gas Strategy Based on Present Worth of Incremental Revenue  
Requirements Over 40 Years  
(millions)**

**Base Load Scenario**

	Base Gas	50% Higher Gas	100% Higher Gas
\$0 CO <sub>2</sub> Price	\$860	\$1,815	\$2,752
\$15 CO <sub>2</sub> Price	\$2,691	\$3,827	\$4,790
\$30 CO <sub>2</sub> Price	\$4,435	\$5,761	\$6,792

**High Load Scenario**

	Base Gas	50% Higher Gas	100% Higher Gas
\$0 CO <sub>2</sub> Price	\$852	\$1,849	\$2,849
\$15 CO <sub>2</sub> Price	\$2,825	\$3,932	\$4,950
\$30 CO <sub>2</sub> Price	\$4,684	\$6,004	\$7,062

**Low Load Scenario**

	Base Gas	50% Higher Gas	100% Higher Gas
\$0 CO <sub>2</sub> Price	\$841	\$1,763	\$2,483
\$15 CO <sub>2</sub> Price	\$2,539	\$3,679	\$4,513
\$30 CO <sub>2</sub> Price	\$4,169	\$5,492	\$6,448

July 12, 2016

From: Kenneth J. Browne  
Senior Engineer  
Business and Financial Services

To: Abney A. Smith  
Manager  
Business and Financial Services

Subject: Resignation

EXHIBIT NO: #20  
WITNESS: Browne  
DATE: 9-25-18  
THOMPSON COURT REPORTING INC.

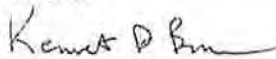
Dear Skip,

I am writing this letter to announce my resignation from SCE&G, to be effective July 29, 2016. I am leaving SCE&G to take the next step into retirement. This was not an easy decision to make. While I look forward to entering the next phase of my life I will miss the friendships I have made here and the excitement of working on this project. Debbie and I will be staying in Blythewood for awhile, however it is our intent to eventually relocate back to the Charleston area to be close to our family.

I believe this is a good time to leave the project as the new Fixed Price agreement takes effect and there should be some reduction in workload for the Business and Finance team. Also, with Joey joining the team, there is someone to help out. I will be working with Joey and the rest of the team to pass along some of my records and computer files and hopefully have a smooth transition over the next couple of weeks. If I can be of any other assistance either before or after my departure, please let me know. I will help out in any way I can. This is a very important project for SCE&G, Santee Cooper and the residents of our state and I will be watching with great interest as a spectator.

I have enjoyed my time at SCE&G and I really appreciate the opportunity that has been provided to me by the company. The friendships made here and the spirit of teamwork and cooperation enjoyed here, have added to my life greatly. I wish you all the best and I look forward to successful completion of the V.C. Summer new nuclear construction project.

Sincerely,



Kenneth J. Browne

Ex. 20

**DIRECT TESTIMONY OF**

**STEPHEN A. BYRNE**

**ON BEHALF OF**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY**

**DOCKET NO. 2016-223-E**

EXHIBIT NO. #21  
WITNESS: Byrne  
DATE: 9-25-18  
THOMPSON COURT REPORTING INC.

**Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION.**

**A.** My name is Stephen A. Byrne, and my business address is 220 Operation Way, Cayce, South Carolina. I am President for Generation and Transmission of South Carolina Electric & Gas Company ("SCE&G" or the "Company").

**Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.**

**A.** I have a Chemical Engineering degree from Wayne State University. After graduation, I started my nuclear career working for the Toledo Edison Company at the Davis-Besse Nuclear Plant. I was granted a Senior Reactor Operator License by the Nuclear Regulatory Commission ("NRC") in 1987. From 1984 to 1995, I held the positions of Shift Technical Advisor, Control Room Supervisor, Shift Manager, Electrical Maintenance Superintendent, Instrument and Controls Maintenance Superintendent, and Operations Manager. I began working for SCE&G in 1995 as the Plant Manager at the V.C. Summer plant. Thereafter, I was promoted to Vice President and Chief Nuclear Officer. In 2004, I was promoted to the position of Senior Vice President for Generation, Nuclear and Fossil Hydro. I was promoted

1 to the position of Executive Vice President for Generation in 2008 and to Executive  
2 Vice President for Generation and Transmission in early 2011. I was promoted to  
3 President for Generation and Transmission and Chief Operating Officer of SCE&G  
4 in 2012.

5 **Q. WHAT ARE YOUR DUTIES WITH SCE&G?**

6 A. As President of Generation and Transmission and Chief Operating Officer  
7 for SCE&G, I am in charge of overseeing the generation and transmission of  
8 electricity for the Company. I also oversee all nuclear operations. Included in my  
9 area of responsibility is the New Nuclear Deployment (“NND”) project in which  
10 Westinghouse Electric Company, LLC (“Westinghouse”) is constructing two  
11 Westinghouse AP1000 nuclear generating units in Jenkinsville, South Carolina (the  
12 “Units”) that are jointly owned by SCE&G and South Carolina Public Service  
13 Authority (“Santee Cooper”).

14 **Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION?**

15 A. Yes. I have testified before the Public Service Commission of South  
16 Carolina (the “Commission”) in several past proceedings.

17 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

18 A. The purpose of my testimony is to discuss the Petition SCE&G filed as a  
19 result of the October 27, 2015 Amendment (the “Amendment”) to the Engineering,  
20 Procurement and Construction Agreement (the “EPC Contract”), as well as  
21 operational, contractual and other matters related to the updates to the cost and  
22 construction schedules proposed in this proceeding. This testimony is also

1 submitted in satisfaction of the requirement imposed by the Commission in Order  
2 2009-104(A) that the Company provide annual status reports concerning its  
3 progress in constructing the Units.

4 **CONSTRUCTION UPDATE**

5 **Q. PLEASE PROVIDE AN OVERVIEW OF THE PROJECT STATUS AS IT**  
6 **RELATES TO CONSTRUCTION.**

7 **A.** While certain aspects of the work present challenges to the completion  
8 schedule, overall progress continues with approximately 3,700 contractor personnel  
9 and subcontractor workers on site daily. A majority of these jobs are held by South  
10 Carolina residents and a number of South Carolina companies are contractors or  
11 subcontractors on the project. We believe this to be the largest construction project  
12 in the history of South Carolina.

13 The critical paths for both Units run through three major milestones for the  
14 project: (1) completion of the Shield Building; (2) completion of structures and  
15 setting of equipment inside Containment; and (3) Initial Energization of the plant to  
16 support testing of equipment and systems. As of June 30, 2016, the Unit 2 primary  
17 critical path runs through the placement of reinforced concrete structures to support  
18 installing the Shield Building upper horizontal transition panels at elevation 146'.  
19 The Unit 3 primary critical path runs through the onsite assembly and completion  
20 of module CA20 sub-assemblies 1 and 2 and lifting and setting them in place in the  
21 Auxiliary Building. This will allow the setting of module CA22 and backfill  
22 activities supporting the Annex Building and Initial Energization.



1 From a broader perspective, when I was before the Commission a little over  
2 a year ago, I testified that the project was passing through an important time of  
3 transition.<sup>1</sup> When we began the project, the most important risks we faced were  
4 related to first-of-a-kind nuclear construction activities. These are two of the first  
5 AP1000 units to be built in the United States. The NND team has worked through  
6 many first-of-a-kind activities. Those include

- 7 1. Initial licensing for the AP1000 design and licensing and permitting for the  
8 construction project at Jenkinsville.
- 9 2. Identifying and responding to unanticipated site conditions.
- 10 3. Re-establishing a nuclear-safety qualified supply chain in the United States.
- 11 4. Fabricating the major equipment for the Units.
- 12 5. Siting and right-of-way acquisition for the major upgrades to our transmission  
13 system needed to deliver power from the Units.
- 14 6. Establishing the Company's ability to finance the nuclear construction  
15 successfully under the BLRA.
- 16 7. Recruiting and hiring the construction workers for the project and recruiting the  
17 personnel to be trained to operate and maintain the Units when complete.

18 Since 2015, we have continued to see improvements in the nuclear supply  
19 chain. Newport News Industrial ("NNI") is consistently supplying shield building

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<sup>1</sup> A transcript of my direct pre-filed testimony in that proceeding can be found at <https://dms.psc.sc.gov/Attachments/Matter/d4fc5467-155d-141f-2316651b5306ebbf>. A copy of this testimony is incorporated here by reference.

1 panels that meet quality and schedule commitments. NNI's current fabrication  
2 schedules indicate that substantially all shield building panels will be delivered on  
3 site before their construction-need dates. The fabrication of the last remaining  
4 component of the shield building walls, the tension ring and air inlets, has been  
5 assigned to NNI, which is a very positive development.

6 At present, more than 80% of the major equipment for the Units is fabricated  
7 and stored on site. The first AP1000 units, which are being built in China, continue  
8 to progress toward successful completion and lessons learned in those projects are  
9 being applied in Jenkinsville. In mid-2016, the first of these units was undergoing  
10 acceptance testing. Initial fuel load for this unit is likely to take place sometime in  
11 2016.

12 Increasingly, the risks that define the project are execution risks related to  
13 construction, fabrication and acceptance testing, along with risks associated with  
14 start-up, including training and licensing the operators and other personnel  
15 necessary to support initial fuel load.

16 **Q. HAVE THERE BEEN IMPORTANT DEVELOPMENTS RELATED TO**  
17 **THE EPC CONTRACT?**

18 **A.** Yes. In September of 2015, Chicago Bridge & Iron ("CB&I") asked for  
19 permission to exit the project which gave us and Westinghouse the opportunity to  
20 restructure the Consortium, hire Fluor Corporation as construction manager, resolve  
21 outstanding contractual disputes between the parties, and revise the EPC Contract  
22 to minimize future disputes. Together, these changes should make the project much

1 easier for Westinghouse and Fluor to manage efficiently to conclusion, which is a  
2 major benefit to SCE&G, Santee Cooper and their customers.

3 **Q. DO YOU HAVE PHOTOGRAPHS OR SLIDES THAT ILLUSTRATE THE**  
4 **STATUS OF CONSTRUCTION AND FABRICATION ACTIVITIES**  
5 **RELATED TO THE UNITS?**

6 A. Yes. Those slides are attached to my testimony as Exhibit No. \_\_ (SAB-1).  
7 Let me now review those slides with the Commission and the parties.

8 **Q. PLEASE DESCRIBE EXHIBIT NO. \_\_ (SAB-2).**

9 A. Exhibit No. \_\_ (SAB-2) is the Milestone Construction schedule based on the  
10 current construction schedule for the Units.

11 **Q. WHAT ARE THE NEW GUARANTEED SUBSTANTIAL COMPLETION**  
12 **DATES FOR THE UNITS?**

13 A. The Guaranteed Substantial Completion Dates ("GSCDs") of the Units are  
14 now August 31, 2019 for Unit 2 and August 31, 2020 for Unit 3. These dates are  
15 each approximately two months later than the projected completion dates approved  
16 in the last BLRA order.

17 **Q. ARE THESE SUBSTANTIAL COMPLETION DATES AND THE**  
18 **CONSTRUCTION SCHEDULES THAT SUPPORT THEM REASONABLE?**

19 A. Yes. The substantial completion dates and the construction schedules set  
20 forth in Exhibit No. \_\_ (SAB-2) are based on extensive construction data that  
21 Westinghouse has provided to SCE&G. That data includes a construction schedule  
22 which identifies and sequences the tens of thousands of specific construction



1 activities that must be accomplished to complete the project. SCE&G's  
2 construction experts have reviewed this schedule and found that its scope and  
3 sequencing is logical and appropriate. As I will discuss in more detail below, the  
4 new construction manager for the project, Fluor, is conducting a full review of that  
5 schedule based on its extensive expertise in these matters. The goal of Fluor's effort  
6 is to ensure that the GSCDs can be met and that any needed mitigation plans are put  
7 in place to support the schedule. Those mitigation plans will include additional  
8 construction staffing and round-the-clock work shifts. Consistent with its  
9 responsibilities as Owner, SCE&G has carefully reviewed and evaluated all  
10 information that is available related to the project and schedule and finds it to be  
11 reasonable.

12 It is my opinion that Westinghouse and Fluor have a reasonable construction  
13 plan in place to achieve the GSCDs. That plan is reflected in the milestone  
14 construction schedule which is attached to my testimony as Exhibit No. \_\_\_\_ (SAB-  
15 2). It is my considered opinion that Exhibit No. \_\_\_\_ (SAB-2) represents a  
16 reasonable and prudent schedule for completing the project as envisioned by the  
17 BLRA and should be adopted as an update to the construction schedule that was  
18 initially adopted as Exhibit E to Order No. 2009-104(A).

19 **Q. YOU MENTIONED THAT FLUOR IS CONTINUING TO REVIEW THE**  
20 **PROJECT SCHEDULE. COULD YOU ELABORATE?**

21 **A.** Fluor continues to review the current schedule based on its construction  
22 management expertise and experience with the project. Fluor's goal is to determine

1 the optimal staffing plans, resource allocations, and sequencing of work to achieve  
2 the GSCDs most efficiently. We expect there will be internal realignments and re-  
3 sequencing of work scopes within the existing schedule.

4 **Q. IS SUCH A REVIEW UNCOMMON?**

5 A. The construction schedule for a project such as this is dynamic by nature and  
6 is subject to constant adjustment as the project progresses. Fluor's current review  
7 of the schedule is not quantitatively different from the review and recalibrating of  
8 the schedule that is on-going continuously in this project as is standard in the  
9 industry.

10 **Q. DOES SCE&G BELIEVE THAT THE BLRA MILESTONE**  
11 **CONSTRUCTION SCHEDULE PROPOSED HERE IS REASONABLE?**

12 A. Yes. This proposed schedule is reasonable. As a result of the Amendment,  
13 we now have in place:

- 14 1. A fully restructured Consortium,
- 15 2. A new and highly-skilled mega-projects construction manager,
- 16 3. An Amendment that eliminates practically all the major commercial  
17 issues between the parties at this time,
- 18 4. An EPC Contract that has been reformulated to limit future disputes, and  
19 5. Revised liquidated damages, completion incentives and other EPC terms  
20 that put Westinghouse at risk for approximately \$1.0 billion on a 100%  
21 basis due to delay.

1 All these factors support the conclusion that the construction schedule attached as  
 2 Exhibit No. \_\_\_\_ (SAB-2) is reasonable and prudent schedule for completing the  
 3 Units.

4 Nonetheless, this remains a very complex and challenging project. Meeting  
 5 the current schedule will require a great deal of construction management skill. But  
 6 Fluor appears well qualified to manage this project. Westinghouse will probably be  
 7 required to invest hundreds of millions of dollars in schedule mitigation. And  
 8 Westinghouse has made a corporate commitment to complete these Units  
 9 successfully to protect its AP1000 business worldwide. For those reasons, I believe  
 10 that Westinghouse and Fluor have both the skills and the incentive to successfully  
 11 complete the project within the schedule attached as Exhibit No. \_\_\_\_ (SAB-2).

#### 12 **EPC CONTRACT AMENDMENT**

13 **Q. PLEASE DESCRIBE THE AMENDMENT.**

14 **A.** The Amendment does a number of things.

15 **1. Resolution of Current Disputes:** The Amendment resolves substantially all  
 16 of the outstanding EPC Contract disputes.

17 **2. Guaranteed Substantial Completion Dates:** The GSCDs of the Units have  
 18 been revised to August 31, 2019 for Unit 2 and August 31, 2020 for Unit 3.

19 **3. New Liquidated Damages Provisions:** New provisions govern delay-  
 20 related liquidated damages and cap liquidated damages at approximately \$371.8

1 million<sup>2</sup> in aggregate for both Units. The current maximum is \$86 million. The  
2 \$371.8 million amount includes \$137.5 million per Unit that Westinghouse must  
3 pay SCE&G if a Unit does not qualify for Federal Production Tax Credits. Also, a  
4 bonus for megawatts in excess of the contractual amount that was included in the  
5 EPC Contract before the Amendment has been eliminated.

6 **4. Federal Production Tax Credit Completion Incentive:** The Consortium  
7 will earn a completion incentive for each Unit that is finished in time to qualify for  
8 Federal Production Tax Credits. The completion incentive is approximately \$165.0  
9 million for both Units.

10 **5. Fixed Price Option:** SCE&G has obtained the right to transfer to the Fixed  
11 Price EPC cost category practically all of EPC costs to be paid after June 30, 2015,  
12 not including future change orders. This Fixed Price amount excludes \$38.3 million  
13 of work within the Time and Materials category. The Fixed Price going forward is  
14 approximately \$3.345 billion.

15 **6. Parental Guarantees:** Westinghouse's parent company, Toshiba  
16 Corporation, reaffirmed its guaranty of Westinghouse's payment obligations under  
17 the EPC Contract. Westinghouse's payment obligations are joint and several  
18 obligations with Stone & Webster. SCE&G and Santee Cooper canceled CB&I's  
19 guaranty with respect to the project to allow CB&I to leave the project.

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<sup>2</sup> Unless otherwise specified, all cost figure in this testimony are stated in 2007 dollars and reflect SCE&G's 55% share of the cost of the Units.

1       **7. New Milestone Payment Schedule:** The parties will develop a revised  
2 construction milestone payment schedule to eliminate the contentious progress  
3 payment schedule in the existing EPC Contract. While the parties are developing  
4 the revised construction milestone payment schedule, SCE&G is making payments  
5 of \$55.0 million per month which are being reconciled against the invoices that  
6 would have been issued under the prior terms of the EPC Contract and will be  
7 credited to the \$3.345 billion cost to complete the Units under the Fixed Price  
8 option. Thereafter, construction milestone payments will be based on the revised  
9 construction milestone payment schedule.

10       **8. Change in Law Definition:** The Change in Law provisions of the EPC  
11 Contract have been amended to reduce the likelihood of future commercial disputes  
12 by clearly defining what legal and regulatory pronouncements constitute a change  
13 in law that entitles Westinghouse to a claim for resulting costs.

14       **9. Design Control Document Revision 19 ("DCD Rev. 19"):** The amended  
15 EPC Contract now expressly states that Westinghouse must provide Units that meet  
16 the standards of the NRC-approved design contained in DCD Rev. 19 in all respects.  
17 DCD Rev. 19 was issued approximately three years after the EPC Contract was  
18 signed and this chronology has been the basis of disputed claims between the  
19 parties.

20       **10. No Interim Lawsuits:** The Amendment eliminates any requirement or  
21 ability for the parties to sue each other before substantial completion of the project.

1       **11. Interim Dispute Resolution Board:** A dispute resolution board and dispute  
2 resolution process is being implemented to resolve commercial claims and disputes  
3 going forward.

4       **12. Equipment Warranties:** Most equipment warranties have been extended  
5 to two years past the substantial completion dates.

6       **Q. CAN YOU PROVIDE US WITH A COPY OF THE AMENDMENT?**

7       A.           A copy of the Amendment is attached to my testimony as Exhibit No. \_\_\_\_  
8 (SAB-3).

9       **Q. BEFORE THE AMENDMENT, WHERE DID THE PROJECT STAND IN**  
10 **REGARDS TO THE POSSIBILITY OF LITIGATION?**

11      A.           When CB&I became the Consortium's construction lead in 2013, there was  
12 good reason to expect positive results. An operating division of CB&I, CB&I  
13 Services, had been on site for several years fabricating the containment vessels for  
14 the Units. After some initial quality issues that were quickly resolved, CB&I  
15 Services' work was consistently timely and of high quality. In its role as  
16 construction lead, however, CB&I did not succeed as expected in improving  
17 construction productivity on the site or resolving quality issues and timeliness issues  
18 at submodule suppliers.

19               At the same time, problems were surfacing between the Consortium partners.  
20 Internal Consortium agreements and interactions are confidential as to us. However,  
21 by mid-2015, disputes were spilling over into the supply chain and impeding action  
22 on important issues. The disputes seemed to be about who in the Consortium was

1 responsible for paying for unanticipated costs in Fixed or Firm cost categories.  
2 Important matters were being delayed while the Consortium partners worked out  
3 their differences.

4 At the same time, the Consortium would not engage SCE&G and Santee  
5 Cooper in meaningful negotiations about the outstanding disputes we had with  
6 them. It seemed to us that CB&I and Westinghouse were avoiding negotiating with  
7 us rather than presenting us with a divided front.

8 We also understood that Consortium members were coming under financial  
9 stress because of the large payments SCE&G had begun to withhold in 2015.  
10 SCE&G did so to protect its rights under the EPC Contract and to put pressure on  
11 the Consortium to improve its schedule and efficiency performance. The  
12 Consortium disputed our right to withhold these payments. But in the end, we  
13 withheld payments worth over \$135 million on a 100% basis.<sup>3</sup> It was not clear what  
14 the Consortium would do in response. But we considered litigation to be a likely  
15 result.

16 When we met in September of 2015, CB&I stated that in its opinion the  
17 project was headed toward litigation, certainly between the Consortium and Santee  
18 Cooper and SCE&G, and possibly between members of the Consortium itself.  
19 Going to litigation could have been highly damaging to the project.

---

<sup>3</sup> Unless otherwise specified, all cost figures in this testimony are stated in 2007 dollars and reflect SCE&G's 55% share of the cost of the Units. The exception is the dollar amounts of liquidated damages and completion incentives, which are stated in future dollars at SCE&G's 55% share.

1 **Q. WHY WAS AVOIDING LITIGATION IMPORTANT?**

2 A. Construction projects succeed where commercial issues are managed  
3 effectively and communication is open. Those things typically do not happen when  
4 a project is in litigation. In addition, schedule mitigation plans are expensive and to  
5 some degree optional with the contractor. When parties are in a difficult commercial  
6 dispute, schedule mitigation can be held hostage to the litigation or become a  
7 bargaining chip. Had the project degenerated into litigation, reaching consensus on  
8 the required mitigation plans would have been very difficult.

9 Apart from the safety and quality of construction, one of SCE&G's principal  
10 objectives was the completion of the Units in time to qualify for all available federal  
11 production tax credits. The projected benefit of those credits is worth approximately  
12 \$2.2 billion and will be passed on directly to our customers. Litigation would put  
13 the project's ability to receive those credits at greater risk.

14 Accordingly, a very important benefit of the Amendment is it diverted us  
15 away from litigation and the delays and disruptions that litigation would have  
16 produced. All parties can now focus on the success of the project, not on success  
17 against each other in the courtroom. In addition, the Amendment contractually rules  
18 out litigation until the project is finished. Given where we were before the  
19 negotiations, this is a very positive outcome for the project and a very important  
20 benefit to our customers.



1 **Q. PLEASE EXPLAIN HOW THE AMENDMENT RULES OUT LITIGATION**  
2 **DURING THE PROJECT.**

3 A. The Amendment establishes a three person dispute resolution board. All  
4 claims under the EPC Contract that the parties cannot work out go to that board. If  
5 a claim is under \$2.75 million (SCE&G's 55% share, \$5 million at 100%), then the  
6 decision of the board is final. If the amount exceeds \$2.75 million, then the decision  
7 of the board is binding until the project is complete. After completion, a party may  
8 bring suit on the matter in court, but only then.

9 In addition, SCE&G is not required to pay any part of a disputed amount  
10 pending a decision of the board. Previously the EPC Contract required SCE&G to  
11 pay 90% of a disputed claim while the dispute was resolved. Instead, SCE&G will  
12 make a one-time \$41.3 million deposit with Westinghouse, which will cover all  
13 disputed amounts pending the board's decision. The deposit will be credited to the  
14 final invoices at the end of the project.

15 **Q. PLEASE EXPLAIN WHAT THE AMENDMENT ACCOMPLISHES IN**  
16 **TERMS OF RESTRUCTURING THE CONSORTIUM.**

17 A. By purchasing Stone & Webster from CB&I, Westinghouse acquired full  
18 control of the project. Westinghouse is now responsible for all matters related to  
19 cost, efficiency and delay. It no longer matters whether the issues are related to  
20 design, engineering, equipment procurement, components or construction:  
21 Westinghouse is responsible. This simplifies decision-making and creates clear

1 lines of accountability. Disputes among Consortium members can no longer be a  
2 source of friction and delay.

3 In addition, removing CB&I from the Consortium has allowed Westinghouse  
4 to hire Fluor as construction manager both for this project and for Southern Nuclear  
5 Company's ("SNC's") Vogtle project. Fluor is exceptionally well qualified for the  
6 job. Fluor's initial steps to improve productivity and schedule performance are  
7 encouraging.

8 **Q. WHAT ARE FLUOR'S QUALIFICATIONS?**

9 A. Fluor Corporation has been in business over 100 years and is ranked 155<sup>th</sup>  
10 among the Fortune 500. It employs 60,000 people worldwide with 2015 revenues  
11 of \$18 billion.

12 Fluor has significant nuclear experience. Fluor has self-performed reactor  
13 construction for eight different nuclear plants, including V.C. Summer Unit 1.  
14 Additionally, the company has assisted in the construction of another ten nuclear  
15 units. Fluor has designed three nuclear plants itself. The company is part of a team  
16 decommissioning 27 nuclear reactors in the United Kingdom, and it is also the prime  
17 contractor at four Department of Energy nuclear sites, including the Savannah River  
18 Site located in Aiken, South Carolina. Through a subsidiary called NuScale, the  
19 company is also designing, developing, and marketing a next generation small  
20 modular reactor.

21 Fluor's non-nuclear power experience includes construction it self-  
22 performed at SCE&G's Fairfield Pumped Storage facility and engineering,

1 procurement, construction and commissioning services for building the Cope and  
2 Jasper Generating Stations and for the Urquhart Plant Units 1 and 2 Repowering.  
3 Additionally, Fluor provided construction services for installing scrubbers and other  
4 major environmental upgrades on the Williams and Wateree Stations. This means  
5 Fluor has held major construction roles involving practically all of the large base-  
6 load generating facilities in SCE&G's system. Over the past five years, Fluor has  
7 managed over a dozen power sector megaprojects worldwide.

8 On a more subjective level, Fluor has been rated as one of the most ethical  
9 companies to do business with for ten years running. We found that very  
10 encouraging. They are good corporate citizens with deep roots in South Carolina.  
11 In its present form, the Company was created by the 1977 merger of Fluor  
12 Corporation and Daniel Construction Company of Greenville. Fluor currently has  
13 approximately 4,500 employees in South Carolina. Greenville is the headquarters  
14 for the nuclear division.

15 Fluor and its employees have contributed \$3.3 million to community  
16 organizations, educational initiatives and programs in South Carolina. Additionally,  
17 volunteers contributed nearly 7,200 volunteer hours in the state. Fluor's  
18 commitment to municipal redevelopment in the Greenville area is one of the leading  
19 examples of corporate community responsibility in South Carolina. Fluor's  
20 Chairman and CEO is a graduate of the University of South Carolina, and the  
21 president of its power division is a graduate of The Citadel.

1 **Q. PLEASE DESCRIBE THE TRANSITION PROCESS FROM CB&I TO**  
2 **FLUOR.**

3 A. January 4, 2016, was the first business day following the effective date of the  
4 Amendment. At that time, a transition began through which CB&I's direct craft  
5 workers on the project became employees of Fluor. A number of CB&I's field  
6 engineering and other field non-manual employees did not transition to Fluor but  
7 went instead to a new Westinghouse subsidiary corporation named WECTEC.  
8 Westinghouse wants to keep these people on a Westinghouse subsidiary's payroll  
9 so that they will be available to support future Westinghouse AP1000 projects  
10 worldwide after this project is complete.

11 **Q. WHAT HAS FLUOR DONE TO IMPROVE THE PRODUCTIVITY AND**  
12 **SCHEDULE PERFORMANCE OF THE PROJECT?**

13 A. In November of 2015, just after the Amendment was signed, Westinghouse  
14 and Fluor identified 25 key work streams as important targets for improvement at  
15 both SCE&G's site and SNC's site. They convened work stream review teams to  
16 decide how to streamline processes, eliminate inefficiencies and identify means to  
17 increase the levels of productivity and accountability. SCE&G personnel and  
18 personnel from SNC's Vogtle project were assigned to a number of these teams.

19 **Q. WHAT CHANGES HAVE BEEN IMPLEMENTED?**

20 A. The initial results of these reviews were implemented in the first half of 2016.  
21 They include standardized and simplified work packages for nuclear island  
22 construction, streamlined processes for equipment transfers between suppliers and

1 contractors, and processes to minimize design changes for module and submodule  
2 vendors. This is an on-going process. As reviews are completed, additional work  
3 flows are being added and additional teams are being convened.

4 It appears to us that Fluor is identifying needed changes to the construction  
5 program and pushing them through with focus, diligence and professionalism. We  
6 are pleased with Fluor's performance in its new role to date.

7 **Q. PLEASE EXPLAIN WHAT THE AMENDMENT ACCOMPLISHES IN**  
8 **TERMS OF INCREASING INCENTIVES FOR TIMELY COMPLETION**  
9 **OF THE PROJECT.**

10 **A.** The EPC Contract caps liquidated damages. At the time the Amendment was  
11 negotiated, one of the challenges we faced was that the completion dates for the  
12 Units had been pushed past the dates at which all of the available liquidated damages  
13 under the EPC Contract would have been earned.

14 As a result, when we began the negotiations, the Consortium was not facing  
15 any additional liquidated damages if the project were delayed beyond the projected  
16 completion dates. This was important because the forecasted substantial completion  
17 date for Unit 3 was only six months ahead of the deadline for qualifying for federal  
18 Production Tax Credits for that Unit. The Unit 2 date was 18 months ahead of the  
19 deadline. Meeting the tax credit deadline for Unit 3 was likely to require expensive  
20 schedule mitigation. The same could be the case for Unit 2 depending on future  
21 developments. There was no direct contractual incentive for the Consortium to  
22 invest in mitigation.

1           As a result, SCE&G and its customers faced the risk that the Consortium  
2           would allow the scheduled completion dates to slip past the tax credit deadlines  
3           rather than spend the additional money needed to prevent that from happening. In  
4           all, SCE&G and its customers stood to lose approximately \$2.2 billion in projected  
5           benefits if neither Unit were to meet the deadline.

6           In the Amendment negotiations, we were able to address this problem. In  
7           those negotiations, Westinghouse told us that it recognized the great value  
8           represented by its AP1000 business and the need to complete our project  
9           successfully to protect that value and Westinghouse's reputation worldwide.  
10          Westinghouse was willing to take on substantial new commitments under the EPC  
11          Contract to accomplish those goals.

12          This may turn out to be a strategy for Westinghouse. In June of 2016, less  
13          than nine months after the Amendment was executed, Westinghouse announced that  
14          it is negotiating a contract to construct six AP1000 units in India. It is working on a  
15          similar proposal to construct three new AP1000 units at the Moorside nuclear power  
16          station on the west coast of England. We also understand that there is interest in  
17          AP1000 units in Europe where nuclear power is increasingly seen as an alternative  
18          to continued reliance on Russian natural gas. The AP1000 unit remains the safest,  
19          most technologically sophisticated and simplest nuclear unit available today.

20          In light of Westinghouse's business interests, we were able to convince  
21          Westinghouse to accept new liquidated damages that are capped at \$371.8 million  
22          for the two Units. Of that amount, \$137.5 million for each Unit (SCE&G's 55%

1 share, \$250 million at 100%) is directly tied to that Unit meeting the deadline for  
2 receiving federal production tax credits.

3 The Amendment also provides for completion incentives. The completion  
4 incentives are paid by individual Unit and are tied to whether the Unit produces  
5 power in time to qualify for the production tax credits. If both Units do qualify, the  
6 total completion incentives would be \$165.0 million (SCE&G's 55% share, \$300  
7 million at 100%).

8 Since these completion incentives have not yet been earned, they are not  
9 included in current BLRA forecasts. No Commission action is requested related to  
10 them in this proceeding.

11 We also had included in the EPC Contract a capacity bonus that would be  
12 paid if the Units were able to generate more electricity than had been guaranteed by  
13 Westinghouse. Westinghouse's engineers had upgraded certain components for the  
14 Units after the initial capacity commitments were made. Westinghouse was  
15 confident that capacity increases were likely and meaningful payments would be  
16 earned under these provisions. In the negotiations, we convinced Westinghouse to  
17 release the potential capacity bonuses.

18 As a result, the total of liquidated damages and completion incentives  
19 contained in the EPC Contract went from effectively zero on an incremental basis  
20 to \$536.8 million at SCE&G's 55% share and approximately \$1.0 billion on a 100%  
21 basis. These are meaningful numbers. They give Westinghouse a financial incentive  
22 to spend money to mitigate delays and keep the project on schedule to qualify for

1 the Production Tax Credits that will be so valuable to our customers when they are  
2 earned.

3 **Q. PLEASE DESCRIBE THE FIXED PRICE OPTION.**

4 A. After the 2011 Amendment to the EPC, approximately two-thirds of the EPC  
5 costs were in either Fixed Price or Firm Price categories. Fixed Price items are not  
6 subject to any adjustment. Firm Price items are fixed in 2007 dollars and subject to  
7 escalation at rates that are either contractually fixed or are reported in published  
8 indices.

9 The remaining non-Fixed, non-Firm costs are found in the Target and Time  
10 and Material categories. Target costs include three labor-related categories:

11 (a) Direct Craft Labor, which represents work done directly on the Units;

12 (b) Field Non-Manual labor, which includes supporting staff such as clerical,  
13 field engineering, Quality Assurance and Quality Control, supervisory  
14 and safety personnel; and

15 (c) Indirect Craft Labor, which is labor that directly supports craft labor in  
16 the field and handles such matters as site sanitation and cleanup, traffic  
17 control, and distribution of commodities, materials, supplies, water and  
18 ice.

19 Time and Materials costs items include services that the Consortium provides  
20 under the EPC Contract in support of the Owner's obligations as owner of the  
21 project, holder of the NRC licenses and environmental permits and future operator



1 of the Units. The Time and Materials cost category also includes the budget for  
2 such things as the cost of local sales taxes, import duties and insurance and the cost  
3 of the initial inventory of spare parts for the Units.

4 In the negotiations with Westinghouse, SCE&G was able to convince  
5 Westinghouse to provide us with an irrevocable option to move all remaining Firm,  
6 Target and Time and Material costs, except for \$38.3 million of the Time and  
7 Material budget, to the Fixed Price category. The Fixed Price would be  
8 approximately \$3.345 billion (future dollars) for all invoices paid after June 30,  
9 2015. Any payments made after that date are credited to the Fixed Price amount.  
10 This is a fixed cost category with no escalation or other adjustment except for future  
11 change orders, if any.

12 As compared to the price presented in the last BLRA proceeding, the increase  
13 in the EPC Contract price under this Fixed Price option is \$505.5 million in future  
14 dollars. This is a little less than 10% of the total EPC cost.

15 **Q. WHY DO YOU REFER TO THIS AS A FIXED PRICE OPTION?**

16  
17 **A.** My use of the term "Fixed Price option" reflects the terminology used in the  
18 EPC Contract. We are transferring costs to the "Fixed Price" category as that item  
19 has been defined in the EPC Contract since 2008. Fixed Price items are items whose  
20 cost does not change for any reason except Owner-directed change orders or  
21 contractor change orders, which are allowed under the definition of Uncontrollable  
22 Circumstance contained in the EPC Contract.

1 **Q. WHAT IS EXCLUDED FROM THE OPTION?**

2 A. At SCE&G's request, the Fixed Price cost excludes several items within the  
3 Time and Materials budget that total approximately \$38.3 million. Among these are  
4 import duties, sales taxes, performance bonds and warranty costs. SCE&G believes  
5 it can manage these costs as well or better than Westinghouse and thus has not  
6 sought to have Westinghouse fix a price for them.

7 The spare parts and equipment budget is also excluded. Westinghouse is  
8 working to create a definitive list of the spare parts and equipment inventory that  
9 must be available to ensure safe and reliable operations of the Units. The parts list  
10 has not been finalized. To reduce the cost of these parts, SCE&G is working with  
11 SNC to create a shared repository of critical parts and equipment. SCE&G was not  
12 inclined to let Westinghouse fix a price for this parts list sight unseen. Instead,  
13 SCE&G wanted to ensure that it receives all the parts and equipment it needs and at  
14 the lowest possible cost. For that reason, SCE&G asked to keep the cost of spare  
15 parts individually budgeted in Time and Materials.

16 Apart from these items, the Fixed Price option sets a price of \$3.345 million  
17 (future dollars) for all of the remaining work under the EPC Contract. The new  
18 price will be subject to future change orders, whether due to Uncontrollable  
19 Circumstance (as defined in the EPC Contract) or for Owner's convenience. This  
20 is in keeping with standard practice in large project contracts. Fixed price contracts  
21 for a large construction project commonly provide that contractors are entitled to  
22 change orders where uncontrollable circumstances are encountered. To ask

1 contractors, in effect, to insure the project against unknown risks is not standard  
2 practice and the prices involved are difficult to estimate. However, as discussed  
3 below, we have sought to tighten up the standards for establishing uncontrollable  
4 circumstances in ways that will help the project and SCE&G's customers.

5 The Fixed Price also does not cover SCE&G's costs as Owner. These include  
6 the cost of the NND effort, as well as Transmission costs. However, with these  
7 limitations, the Fixed Price option sets a definitive price to complete the work as  
8 currently envisioned under the EPC Contract.

9 **Q. HAS SCE&G DECIDED TO EXERCISE THIS OPTION?**

10 A. By letter dated May 24, 2016, SCE&G informed Westinghouse that it  
11 intended to exercise this option. There were two conditions to this approval  
12 becoming final. By its terms, the exercise of the option is subject to regulatory  
13 approvals, which would include approval by this Commission. The other is formal  
14 authorization from our co-owner Santee Cooper. Santee Cooper provided that  
15 authorization on June 30, 2016.

16 **Q. PLEASE EXPLAIN THE BASIS ON WHICH SCE&G DECIDED TO**  
17 **EXERCISE THE OPTION.**

18 A. In making the decision to exercise the option, SCE&G considered three types  
19 of information. First, we considered the information we received from Fluor during  
20 the first half of 2016 and earlier as Fluor's construction experts assessed the project  
21 and began to implement mitigation plans. Second, we considered our own  
22 experience with the project both before and after Fluor came into the picture. Third,

1 we considered the sensitivity study Dr. Lynch performed related to the value of  
2 exercising the option. Each of these sources of information strongly supported  
3 exercising the option.

4 **Q. WHAT DID YOU LEARN FROM YOUR INTERACTION WITH FLUOR?**

5 A. Since the Amendment was signed, we have been closely following Fluor's  
6 approach to improving schedule performance and labor productivity on site. Fluor  
7 has already made very helpful changes in work flows and management. But these  
8 changes are clearly not enough to solve current schedule and productivity issues by  
9 themselves. Fluor has recognized this and is recruiting, hiring and training an  
10 expanded construction workforce to accelerate the construction schedule.  
11 Specifically, a limited-scope night shift of approximately 300 craft workers is  
12 already in place. Fluor is actively working to expand it to a full-scope night shift of  
13 more than 1,000 craft workers.

14 Expanding the workforce in this way shows Fluor understands that it will  
15 require more workers working more hours than forecasted to complete the project  
16 on schedule. This means higher labor costs, which absent exercise of the Fixed Price  
17 option will be passed on to SCE&G and its customers. In addition, adding a night  
18 shift, in itself, generally increases costs. Fluor's actions to date indicate that costs  
19 will rise to meet schedule commitments.

20 **Q. WHY DOES ADDING A NIGHT SHIFT INCREASE COSTS?**

21 A. Attracting workers to a night shift will require Fluor to pay them a premium.  
22 In addition, workers on a night shift need supervision and support just like their

1 counterparts on the day shift. Therefore, adding a night shift requires staffing a night  
2 shift of Field Non-Manual personnel and Indirect Craft Labor to provide that  
3 support. These additional shifts of support personnel represent additional costs to  
4 the project.

5 **Q. WHAT IS YOUR CURRENT EXPERIENCE CONCERNING THE PER-**  
6 **UNIT COST OF LABOR AT THE PROJECT AND THE POTENTIAL FOR**  
7 **ESCALATION THERE?**

8 **A.** Demand for construction workers is increasing with the improving economy.  
9 With the ongoing retirements of coal-fired plants, and the need to deliver newly  
10 discovered supplies of shale gas to market, a number of new gas pipelines are being  
11 built. Demand for gas pipeline workers is particularly high. Pipeline projects  
12 compete with nuclear projects for many of the same workers, especially highly  
13 skilled welders and heavy equipment operators. Currently, Fluor is hiring and  
14 training new workers at an accelerating pace to mitigate schedule delays. But Fluor  
15 is also losing trained workers from the project to other opportunities in significant  
16 numbers. Work force retention is now an important limiting factor in Fluor's plan  
17 to mitigate the construction schedule.

18 **Q. WHAT ARE THE IMPLICATIONS OF WORKFORCE ATTRITION AND**  
19 **RETENTION ISSUES FOR PROJECT COSTS?**

20 **A.** Increased workforce attrition means increased recruiting and training costs.  
21 To improve retention of workers on-site, Fluor will likely need to offer additional  
22 pay and benefits. Absent SCE&G exercising the Fixed Price option, these

1 additional costs will be passed to SCE&G and its customers as Target costs. Taking  
2 all of these factors together, I believe that the additional labor costs associated with  
3 mitigating the construction schedule are likely to significantly impact the cost to  
4 complete the project.

5 **Q. AS TO THE VALUE OF EXERCISING THE OPTION, WHAT DID YOU**  
6 **LEARN FROM YOUR OWN EXPERIENCE WITH THE PROJECT?**

7 A. The initial 2008 cost projections for the project were based on a productivity  
8 factor of 1.0. This meant that the Consortium projected that the units of labor  
9 needed to complete this project would be the same as the units of labor needed to  
10 complete similar tasks on standard, non-nuclear construction projects. The cost  
11 projection provided by the Consortium in 2014 was based on a labor productivity  
12 factor of 1.15 or 15% higher than the initial projection.

13 To date, the project has not been able to meet either the 1.0 or 1.15  
14 productivity factors for any sustained period. The cumulative productivity factor  
15 since the project began is approximately 1.75.

16 We have computed the labor productivity factor that Fluor and Westinghouse  
17 must achieve from January of 2016 forward to have actual costs to SCE&G come  
18 in less than the Fixed Price, all other things being equal. That labor productivity  
19 factor is 1.15. We expect construction to become more efficient under Fluor and  
20 with a restructured project team. But it is unlikely that productivity will improve  
21 fast enough for the remaining work on the project to be completed at a productivity  
22 factor of 1.15 or below. Our experience with the project to date makes us believe

1 that it is highly unlikely that Fluor and Westinghouse can bring the productivity  
2 factor to 1.15 or lower measured between January 1, 2016, and the end of the  
3 project. This tells us that, all other things being equal, exercising the Fixed Price  
4 option is best for the Company and its customers.

5 **Q. PLEASE EXPLAIN DR. LYNCH'S SENSITIVITY STUDY AND THE**  
6 **ASSUMPTIONS UNDERLYING IT.**

7 **A.** We asked Dr. Lynch to run a sensitivity analysis to show how SCE&G's  
8 costs under the EPC Contract might vary if we did not exercise the Fixed Price  
9 option. The first step was to identify the proper variables to model. We examined  
10 the cost categories in the EPC Contract for which SCE&G is at-risk and what drives  
11 costs in those categories. Based on this analysis, we determined that Dr. Lynch's  
12 analysis could focus on two critical variables: Direct Labor productivity and  
13 escalation in labor rates.

14 **Q. PLEASE EXPLAIN WHAT THESE FACTORS MEASURE.**

15 **A.** There are two factors involved in labor costs: units of labor and labor costs  
16 per unit. The equation is simple. Costs equal units of labor times costs per unit.

17 Anything that increases the units of labor needed to complete the project  
18 increases the labor productivity factor. Therefore, the labor productivity factor  
19 captures in one number all the things that can increase labor requirements for a  
20 project by delaying, frustrating or complicating a construction plan. For that reason,  
21 it is possible to analyze the effect of all factors that result in a change in amount of

1 labor required to complete the project by varying one number, the labor productivity  
2 factor.

3 The second variable in Dr. Lynch's analysis is the per-unit cost of labor. As  
4 indicated above, there is reason to believe that Fluor and Westinghouse will need to  
5 increase pay and benefits to attract and retain the expanded workforce they need to  
6 mitigate schedule delays. This will increase per-unit labor costs. In Dr. Lynch's  
7 study, we sought to measure what outcomes were possible under reasonable  
8 assumptions concerning possible future changes in per-unit labor costs and  
9 productivity factors.

10 **Q. WHY IS IT POSSIBLE FOR DR. LYNCH TO MODEL POSSIBLE FUTURE**  
11 **VARIATION IN EPC CONTRACT COSTS BY FOCUSING ON LABOR-**  
12 **RELATED VARIABLES ONLY?**

13 **A.** The EPC Contract contains four principal groupings of cost for pricing  
14 purposes: Fixed Price costs, Firm Price costs, Time and Materials costs, and Target  
15 Price costs.

16 Costs in the Fixed or Firm Price categories are set in 2007 dollars, either with  
17 no escalation, or escalation set at a specified or indexed rate. Apart from change  
18 orders, indexed escalation is the only source of variation in these costs. Where  
19 indexed escalation applies, the current estimates of inflation are built into the  
20 existing cost forecasts in those categories. Accordingly, cost variation coming from  
21 the Fixed or Firm costs categories is not likely to be material, especially when  
22 compared with the possible changes in cost categories which are not Fixed or Firm.



1 All non-Fixed or non-Firm costs are found either in the Target Price category  
2 or the Time and Material category. The Time and Material category is very small  
3 and represents 1.1% of the EPC Contract remaining to be spent. The Target price  
4 category represents the great majority of the non-Fixed or Firm costs.  
5 Approximately eighty percent (80%) of the costs within the Target Price category  
6 are labor costs. Therefore, SCE&G's cost risks under the EPC Contract, absent  
7 exercise of the Fixed Price option, are concentrated in the labor costs found in the  
8 Target Price cost category.

9 **Q. PLEASE DESCRIBE THE LABOR COSTS CATEGORIES THAT MAKE**  
10 **UP THE TARGET COSTS.**

11 **A.** The three specific cost categories that are part of Target Price costs are Direct  
12 Craft Labor, Indirect Craft Labor, and Field Non-Manual Labor. Direct Craft Labor  
13 is the labor directly involved in tasks that build the Units. Indirect Craft Labor and  
14 Field Non-Manual Labor are work that supports Direct Craft Labor. Because  
15 Indirect Labor and Field Non-Manual labor support Direct Craft Labor, the principal  
16 driver of changes in Indirect Labor and Field Non-Manual utilization is a change in  
17 Direct Labor productivity. Therefore, it is standard practice in the industry to  
18 measure the amount of Indirect Labor and Field Non-Manual Labor required for a  
19 project by applying a ratio of these items to Direct Craft Labor. For example, a  
20 standard measure of Indirect Labor might be that 0.6 units of Indirect Labor are  
21 required to support each unit of Direct Craft Labor. Applying such ratios to the units  
22 of Direct Labor generates the required units of Indirect Labor and Field Non-Manual

1 labor. In this way, the amount of labor needed to support direct construction work  
2 varies automatically with changes in the amount of labor devoted to direct  
3 construction work.

4 We asked Dr. Lynch to use these same approaches in his analysis. In the  
5 model he used, the units of Indirect Labor and Field Non-Manual vary  
6 proportionally to changes in Direct Labor units. In this way, the effect of varying  
7 productivity rates for Direct Labor flows directly through to the calculation to  
8 determine the units of Indirect Labor and Field Non-Manual Labor that will be  
9 required.

10 **Q. WHAT RANGE OF VARIABLES DID YOU ASK DR. LYNCH TO MODEL?**

11 A. At the lower end of the spectrum (most efficient), we asked Dr. Lynch to  
12 model labor costs at a productivity factor of 1.0 which is the factor on which the  
13 initial cost projections were based in 2008. Based on our experience to date, and  
14 what we know of Fluor and Westinghouse's plans going forward, achieving a Direct  
15 Labor productivity factor as favorable as 1.0 over the remaining course of the project  
16 would be highly unlikely.

17 Also at the low end of the range, we asked Dr. Lynch to model the  
18 productivity factor used in the 2014 Consortium cost projections of 1.15. It is the  
19 stated goal of Westinghouse to reach this productivity factor over the remaining  
20 years of the project. That is a worthy goal. But given what we know today, it would  
21 seem unlikely that it can be reached since schedule mitigation is the predominant

1 concern going forward. Schedule mitigation will likely involve additional labor and  
2 therefore less favorable labor productivity than would otherwise be the case.

3 At the upper end of the range of the analysis, we asked Dr. Lynch to model  
4 a productivity factor of 2.0. That value reflects an approximate doubling of the size  
5 of the construction workforce as compared to initial projections. After careful  
6 review, it is our conclusion that it is feasible for a workforce of that size to be  
7 recruited and trained and to work efficiently on site. With skillful construction  
8 management and vigilant quality assurance and quality control, and absent  
9 unforeseen challenges, we believe that a workforce of that size should be able to  
10 overcome the reasonably foreseeable challenges involved in meeting the GSCDs.

11 To create a representative range of values, we also asked Dr. Lynch to model  
12 each of the productivity rates which lie at 0.25 increments between productivity  
13 factors of 1.0 and 2.0.

14 As to per-unit labor cost rates, we asked Dr. Lynch to model scenarios  
15 assuming that the unit cost of labor varied by 0%, 2.9%, 5% or 7% cumulatively  
16 over the course of the project. It was our judgment that while labor rates will likely  
17 need to increase above current estimates (which already include an escalation factor  
18 based on current expectations), it was unlikely that these rates would increase  
19 cumulatively by as much as 7% over the life of the project. It was not at all likely  
20 that labor will remain constant over the life of the project compared to the initial  
21 projections.

1 **Q. WHAT IS YOUR OPINION CONCERNING THE RESULTING RANGE OF**  
2 **VALUES?**

3 A. It is my judgment that a sensitivity analysis which measures costs over this  
4 band of values captures the foreseeable range of potential changes in EPC costs that  
5 SCE&G and its customers would face absent SCE&G exercising the Fixed Price  
6 option. As a result, Dr. Lynch's analysis accurately measures the potential value of  
7 the Fixed Price option to SCE&G and its customers.

8 **Q. WHAT WAS THE RESULT OF DR. LYNCH'S SENSITIVITY ANALYSIS?**

9 A. The resulting sensitivity analysis is attached to Dr. Lynch's testimony as  
10 Exhibit No. \_\_ (JML-1). It is my opinion that the construction and engineering  
11 assumptions it reflects are reasonable and accurate.

12 The analysis compares the cost to complete the Units without the Fixed Price  
13 option to the cost if the Fixed Price option is exercised. It presents results for 24  
14 possible combinations of factors. In only four of the 24 scenarios was it cheaper to  
15 forego the Fixed Price option. In three of these four scenarios, Westinghouse and  
16 Fluor would need to achieve a 1.0 direct labor productivity factor over the remaining  
17 life of the project for that to be the case. We believe that is practically impossible  
18 and know it to be inconsistent with the schedule mitigation plans that Fluor is  
19 putting in place today which will result in higher (less favorable) productivity rates  
20 than previously forecasted. The fourth scenario involves a productivity factor of  
21 1.15, which is itself highly unlikely. But it also assumes that labor prices remain  
22 constant over the remaining life of the project. We are unaware of any reason to

1 expect that this will occur. All indications are that per unit labor costs will be forced  
2 upward as Fluor seeks to execute its current schedule mitigation plan, which will  
3 require maintaining a greatly expanded workforce on site.

4 The remaining 20 scenarios show that it is cheaper for SCE&G and its  
5 customers if SCE&G exercises the Fixed Price option. Based on our experience  
6 with the project, the most likely six scenarios are those where productivity factors  
7 are in the range of 1.50, 1.75 and 2.00, and labor cost growth rates of 2.9% and 5%.  
8 Within this range of values, exercising the Fixed Price option would reduce the EPC  
9 Contract cost, net of future change orders, by between 10.9% and 29.3%.

10 It is my judgment that this analysis accurately reflects the key drivers of cost  
11 that are relevant to the decision to execute the Fixed Price option. The results  
12 unequivocally support the prudence of exercising the Fixed Option, and the benefit  
13 that this will provide SCE&G and its customers in the form of greater price security  
14 and ultimately a lower price.

15 **Q. PLEASE EXPLAIN THE SITUATION REGARDING EQUIPMENT**  
16 **WARRANTIES AT THE TIME OF THE NEGOTIATIONS.**

17 **A.** At the time of the negotiations, delays had pushed the substantial completion  
18 dates for the Units out in such a way that a number of the key equipment and  
19 component warranties would have begun to run before the Units were placed in  
20 service and could have expired before there had been sufficient time to identify any  
21 issues that needed to be corrected. At one juncture, Westinghouse had indicated  
22 that the cost of extending these warranties could be as much as \$66 million. Under

1 the Amendment, the equipment warranties will begin to run upon substantial  
2 completion. In the Amendment, Westinghouse agreed to provide equipment  
3 warranties related to the Units tied to the actual completion dates achieved by the  
4 project.

5 **Q. PLEASE EXPLAIN WHAT THE AMENDMENT ACCOMPLISHES IN**  
6 **TERMS OF RESTRUCTURING THE EPC CONTRACT TO AVOID**  
7 **FUTURE DISPUTES.**

8 **A.** I have already discussed the new dispute resolution board and the provisions  
9 of the Amendment that rule out litigation until after the project is complete. In  
10 addition, the Amendment makes a number of other changes in the EPC Contract to  
11 limit future disputes. Some of the most important ones are as follows:

12 **The Change in Law Provisions.** The Change in Law provisions of the EPC  
13 Contract have been the basis of a number of claims by the Consortium for change  
14 orders authorizing additional payments when they have encountered unanticipated  
15 decisions or guidance from NRC staff and inspectors that increased costs. We have  
16 disputed those claims. The Amendment revises the EPC Contract to make it clear  
17 that Westinghouse is entitled to a change order only if a change in law or regulation  
18 is embodied in a statute or a formal, written regulatory pronouncement. If the  
19 change in law is NRC-related, it must be announced through one of a specified list  
20 of formal agency pronouncements. Interpretations or staff opinions do not qualify  
21 as the Consortium had sought to assert in the past.

1           **Design Control Document Revision No. 19.** When the EPC Contract was  
2 signed in 2008, the NRC had approved the design of the AP1000 unit through  
3 Design Control Document Revision No. 15 (DCD Rev. 15). It was understood that  
4 additional revisions would be required to meet new NRC aircraft impact rules and  
5 to incorporate other design modifications identified by Westinghouse. These  
6 changes were incorporated in DCD Rev. 19 which was issued in 2011. The COL  
7 for the Units was issued in 2012 and was based on DCD Rev. 19.

8           In several instances, Westinghouse has sought to argue that because of this  
9 chronology it was only contractually required to provide supporting software,  
10 documentation and other material reflecting the AP1000 design up to DCD Rev. 15.  
11 Under the Amendment, the language in the EPC Contract makes it clear that  
12 materials conforming to all changes in the design of the AP1000 unit, up to and  
13 including DCD Rev. 19, are required without additional change orders.

14           **New Milestone Payment Schedule.** As discussed above, a source of past  
15 disputes with the Consortium has been the calendar-based payment schedule for  
16 certain costs under the EPC Contract. Going forward, all payments will be tied to  
17 Westinghouse accomplishing specific construction milestones or other measures of  
18 actual progress. This not only eliminates a source of dispute, but also creates a cash-  
19 flow incentive for Westinghouse to meet the construction schedule.

20           During the transition to the new milestone payment schedule, SCE&G is  
21 making payments of \$55.0 million per month. These payments will be trued up  
22 against invoices for work during the period and against the Fixed Price amount of

1       \$3.345 billion. Once the new construction milestone payment schedule is finalized,  
2       future payments will be based on that schedule. If the payment schedule cannot be  
3       produced by agreement, then the dispute resolution board will mediate the matter.

4               These changes in the payment schedule are very valuable from SCE&G's  
5       perspective. They will serve to minimize the claims by Westinghouse going  
6       forward and will minimize future distraction related to commercial disputes. Tying  
7       payments to construction milestones also creates a strong incentive for completing  
8       major scopes of work and improving schedule performance.

9       **Q. PLEASE EXPLAIN WHAT THE AMENDMENT ACCOMPLISHES IN**  
10       **TERMS OF RESOLVING EXISTING DISPUTES BETWEEN THE**  
11       **PARTIES.**

12       **A.**       When the negotiations took place, it was clear from the perspective of the  
13       negotiating team that the project could not avoid litigation without resolving  
14       outstanding issues concerning disputed invoices, change orders, and change order  
15       notices. Nor was it likely that CB&I could leave the project with major unresolved  
16       claims on the table, and without quantifying what its costs would be in leaving. In  
17       negotiating the Amendment, we excluded only ten items, which are listed on Exhibit  
18       C to the Amendment. These items were subject to ongoing negotiations and  
19       quantification of scope and amount. They will be submitted to the dispute resolution  
20       board if the parties cannot resolve them quickly.



**1 Q. WHAT MATTERS WERE RESOLVED?**

2 A. Among the matters resolved were invoices we disputed in whole or in part  
3 on productivity and efficiency grounds, payments we had withheld due to timing  
4 issues, costs we believe never should have been billed to us including costs  
5 associated with structural module delays, and disputed costs associated with change  
6 orders or their precursors, notices of changes. Mr. Kochems will provide the  
7 accounting details about these matters. I can provide a view of these matters from  
8 the negotiating team's perspective.

**9 Q. COULD YOU PLEASE DESCRIBE THE ISSUES RELATED TO  
10 PRODUCTIVITY AND EFFICIENCY CHALLENGES?**

11 A. One group of challenged costs involved invoices that SCE&G and Santee  
12 Cooper refused to pay based on productivity concerns. As I indicated earlier in my  
13 testimony, beginning in June of 2015, for each invoice involving Target labor, we  
14 calculated an alternative invoice by applying the labor productivity factors and labor  
15 efficiency ratios that the Consortium used in its original project cost forecasts.  
16 (Labor efficiency ratios are the ratios of Indirect Labor and Field Non-Manual labor  
17 associated with Direct Craft Labor.) We disputed the difference between the actual  
18 and alternative invoices, and withheld 10% of the disputed amount as the EPC  
19 Contract provided.

**20 Q. WHAT WAS THE CONSORTIUM'S POSITION?**

21 A. The Consortium argued that the productivity and efficiency ratios that it used  
22 in preparing the prior forecasts were estimates only and SCE&G and Santee Cooper

1        were contractually at risk to pay actual costs. In response, SCE&G and Santee  
2        Cooper argued that the EPC Contract contained terms requiring the Consortium to  
3        construct the Units using “Good Industry Practice,” which encompasses “the  
4        practices, methods, standards and acts engaged in and generally acceptable to the  
5        nuclear power industry in the United States.” SCE&G and Santee Cooper asserted  
6        that the failure by the Consortium to achieve its earlier productivity and efficiency  
7        estimates was the result of the Consortium’s failure to use Good Industry Practice.

8                The Consortium countered that it was following Good Industry Practice but  
9        was hampered by the new NRC licensing structure, the lack of an established supply  
10       chain for new nuclear construction, and first-of-a-kind issues related to the AP1000  
11       design. Those are the principal arguments that would have been taken into litigation  
12       had the Amendment not resolved these disputes.

13    **Q.    HOW WERE THESE ISSUES RESOLVED?**

14    **A.**        In the end, disputing these amounts was effective in bringing financial  
15       pressure on the Consortium to correct its productivity and efficiency issues.  
16       However, there was never any assurance that if the matter was litigated a court  
17       would have attributed 100% of the disputed costs to the Consortium’s failure to use  
18       Good Industry Practice. By the time the Amendment was signed, we had withheld  
19       payments of \$6.7 million and disputed payments of an additional \$60.6 million. All  
20       of these claims were resolved by the Amendment.

1 **Q. COULD YOU PLEASE DESCRIBE THE RESOLUTION OF ISSUES**  
2 **RELATED TO INVOICES DISPUTED DUE TO TIMING?**

3 A. A second set of disputed items involved payments SCE&G and Santee  
4 Cooper withheld from the Consortium entirely due to timing. I mentioned these  
5 disputes earlier in my testimony. They involved \$67.6 million in Fixed Price and  
6 Firm Price invoices that were tied to calendar-based payments under the EPC  
7 Contract.

8 SCE&G returned these invoices unpaid arguing that sufficient work on the  
9 site had not been completed to justify payment. There was no express language in  
10 the EPC Contract authorizing this although certain schedules attached to the EPC  
11 Contract did support our claim. Our principal grounds for withholding these  
12 payments were that the Consortium was in violation of the Good Industry Practices  
13 standard as to the management of the project. The Consortium vehemently disputed  
14 our approach.

15 In the negotiations to settle these matters, both parties recognized that these  
16 were Fixed and Firm cost items, the disputes about these costs were timing disputes  
17 only, and SCE&G would pay these costs at some point. The Amendment resolved  
18 this dispute by providing for a new, milestone-based payment schedule to replace  
19 the calendar-based schedule that applied earlier. Payments under the new milestone-  
20 based schedule will bring the payment stream in line with construction progress.

21

1 **Q. COULD YOU PLEASE DESCRIBE THE ISSUES RELATED TO**  
2 **IMPROPERLY BILLED COSTS?**

3 A. Going back a number of years, SCE&G and Santee Cooper have disputed  
4 invoices which included costs billed as Target cost that SCE&G and Santee Cooper  
5 believed were associated with Fixed or Firm scopes of work or where prior change  
6 orders covered them. For example, the Consortium attempted to bill SCE&G for  
7 submodule and mechanical rework done on site using Direct Craft construction  
8 labor, even though submodule production is a Fixed Cost item. SCE&G returned  
9 the invoices unpaid. In addition SCE&G and Santee Cooper entered into Change  
10 Order 16 to resolve all costs associated with structural module delays. On that basis,  
11 SCE&G and Santee Cooper returned invoices for the cost of on-site storage of  
12 equipment that would not have been required but for the structural module delays.  
13 Similar claims were made related to the escalation-related costs that were associated  
14 with payments that were delayed due to structural module delay. The total amount  
15 of costs in this category is \$13.7 million.

16 **Q. COULD YOU PLEASE DESCRIBE THE ISSUES RELATED TO**  
17 **OUTSTANDING CHANGE ORDERS AND NOTICES OF POTENTIAL**  
18 **CHANGES?**

19 A. A fourth group of payment disputes related to a number of change orders and  
20 notices of potential change orders that were outstanding at the time of the  
21 Amendment. These items are among the 30 specific claims, change orders or other  
22 commercial items listed as being resolved on Exhibit A to the Amendment. They

1 include the costs associated with Cyber Security upgrades; Site Layout Changes  
2 Phases 1 & 2 (physical security related); support for First-of-a-Kind and First-  
3 Three-of-a-Kind AP1000 Testing; and the cost of the Schedule Mitigation for Shield  
4 Building Panels at NNI. The total value of the Consortium's claims at issue in these  
5 matters is \$145.6 million. This amount includes the costs associated with the  
6 warranty extension of \$66 million that is discussed above.

7 **Q. HAS SCE&G ATTEMPTED TO VALUE THE RESOLUTION OF CLAIMS?**

8 **A.** Yes. We have calculated that the Consortium's quantifiable claims against  
9 us were worth \$224.4 million to the Consortium, and would be worth more if non-  
10 quantifiable claims were included. The \$224.4 million figure only includes claims  
11 by the Consortium that we could quantify with reasonable certainty given the data  
12 provided by the Consortium at the time of the negotiation. The amount would be  
13 much higher if the Consortium's claims that had yet to be itemized and quantified  
14 at the time of the negotiations were taken into account. This \$224.4 million figure  
15 is also a net amount. It includes an offset for the Consortium invoices we disputed.  
16 We included what we believe to be a very reasonable valuation of those claims.

17 **Q. PLEASE ELABORATE.**

18 **A.** Mr. Kochems will testify in more detail about this valuation. As to  
19 Westinghouse's claims against SCE&G, we included in the \$224.4 million  
20 valuation only Westinghouse's claims that were invoiced with sufficient supporting  
21 data to be accurately quantified. Exhibit A to the Amendment lists 30 specific  
22 change orders and other claims that were resolved by the Amendment. Only twelve

1 of those 30 claims met our standards for quantification, and only these twelve were  
2 included in our calculations. Although the other 18 items included potentially large  
3 claims by the Consortium, we did not quantify them in our valuation. This makes  
4 the \$224.4 million valuation conservative and low. In addition, over the course of  
5 the project Westinghouse had issued to SCE&G 35 other notices of change that had  
6 not advanced to the point of being listed as definitive claims on Exhibit A. We did  
7 not quantify these claims in computing the \$224.4 million valuation.

8 As to SCE&G's claims against Westinghouse, we gave ourselves credit for  
9 100% of the amounts we withheld from payment due to productivity, delay or  
10 efficiency challenges, structural module delay or other causes. We assumed that the  
11 amounts not withheld, specifically the 90% of the disputed amounts related to  
12 productivity and efficiency, were resolved 50%/50%. Again, this is a reasonable  
13 assumption given the challenges of prevailing 100% on these claims.

14 The result of netting all of these claims and counterclaims is this: The  
15 Amendment, which resulted in a \$137.5 million increase in EPC Contract price and  
16 included many other kinds of benefits, resolved quantifiable claims worth \$224.4  
17 million, and unquantified claims would have raised this amount even higher.

18 The total value of all of the claims resolved cannot be specifically computed,  
19 since they were resolved before the Consortium had quantified them. However,  
20 when the Amendment was signed, CB&I announced that it would take an  
21 approximately \$1.0 billion charge after taxes for losses associated with its exit from  
22 the new nuclear construction business.

1 **Q. IS THERE A SPECIFIC PART OF THE COST OF THE AMENDMENT**  
2 **THAT SCE&G AND SANTEE COOPER CAN IDENTIFY AS THE**  
3 **AMOUNT PAID TO RESOLVE THESE CLAIMS?**

4 **A.** No. There was never a point in the negotiation where we took up the  
5 disputed payments, claims and change orders separately from other issues and  
6 sought to negotiate a resolution to them in isolation. Instead, we negotiated very  
7 aggressively with Westinghouse to determine what we could convince  
8 Westinghouse to accept in exchange for SCE&G and Santee Cooper agreeing to  
9 release CB&I from the Consortium. It worked to our benefit that Westinghouse was  
10 strongly motivated to restructure the Consortium and put the project in a position in  
11 which its success would support Westinghouse's efforts to market the AP1000 unit  
12 worldwide. That motivation, in part, resulted in what we believe is a good deal for  
13 us and our customers.

14 **Q. PLEASE EXPLAIN.**

15 **A.** When the negotiations were completed, Westinghouse had subjected itself to  
16 revised liquidated damages of \$676.0 million on a 100% basis, and SCE&G had  
17 secured the opportunity to move substantially all remaining costs of the project into  
18 the Fixed Cost category. Dr. Lynch's study shows that this benefit alone could be  
19 worth between approximately \$363.0 million and \$981.0 million before the project  
20 is concluded. We also made important changes in the EPC Contract that favor  
21 SCE&G and its customers and cut off a range of potential future claims by  
22 Westinghouse based on changes in law or the late adoption of DCD Rev. 19. We

1 changed the payment schedule for the project so that going forward Westinghouse  
2 will not get cash until it completes important scopes of work. This change both  
3 protects us financially and provides Westinghouse with a strong incentive to work  
4 efficiently to get paid. We resolved critically important warranty issues. We  
5 obtained a new structure for dispute resolution that removes Westinghouse's ability  
6 to tie the project up in court if things do not go according to Westinghouse's liking.  
7 We secured the changes needed to allow the Consortium to be restructured and Fluor  
8 to be hired. And we persuaded the Consortium to settle practically all outstanding  
9 claims.

10 It took a great deal of negotiation to secure these benefits. But ultimately, we  
11 were able to obtain Westinghouse's agreement to this entire package of benefits for  
12 an increase in the EPC Contract price of \$137.5 million (SCE&G's 55% share, \$250  
13 million at 100%). During the negotiations, there was never a point at which the  
14 disputed claims and change orders, which we quantify at \$224.4 million or more,  
15 were negotiated on a stand-alone basis. The Amendment was negotiated as a  
16 package. Its costs and benefits were considered as a package. The EPC price  
17 increase was amount was negotiated as a lump sum amount.

18 The Amendment must be evaluated as a whole because that is how it was  
19 negotiated. From SCE&G's perspective and that of its customers, \$137.5 million  
20 was a reasonable price to pay to settle these outstanding claims and to obtain the  
21 other benefits of the Amendment.  
22



**CHANGE ORDERS**

**Q. PLEASE DESCRIBE HOW CHANGE ORDERS WILL BE HANDLED UNDER THE AMENDMENT.**

**A.** As discussed previously, the Amendment resolved most of the change orders and notices of change outstanding as of December 31, 2015. But not all such items were resolved. Eleven claims or change orders that were not resolved in the Amendment have now been quantified and itemized. The costs associated with them have been added to the cost forecasts for the project under the terms of the BLRA.

**Q. PLEASE DESCRIBE THE CHANGE ORDERS WHICH ARE PRESENTED HERE FOR INCLUSION IN COST FORECASTS.**

**A.** In all, eleven potential change orders are presented here for inclusion in the capital cost forecasts for the Units. Mr. Kochems will describe all eleven. I will review the five potential change orders with the largest cost impact.

**Site Layout Changes Phase 3.** Part of finalizing the physical configuration of a nuclear unit is reviewing the final placement and design of buildings, site layout and other features to identify the changes and improvements that are required to support the physical security of the site. This work is being undertaken in three phases. The Amendment covered the costs of Phases 1 and 2. At the time of the negotiations, SCE&G was working with Westinghouse to quantify the costs associated with Phase 3, which includes security modifications to the structures and buildings on the site, as well as the installation of additional security equipment.

1 SCE&G has now quantified the amount of the costs that will be associated with  
2 Phase 3 of this work. That amount is approximately \$29.6 million.

3 **Plant Security Systems Integration.** The EPC Contract provides for  
4 independent plant security systems for each Unit. These represent the software and  
5 other systems used to provide physical security to the Units and respond to security  
6 events. SCE&G has requested that Westinghouse integrate the two plant security  
7 systems so that they operate as one single functioning plant security system. This  
8 will greatly simplify operations, improve response times and reduce the cost of  
9 maintenance and testing going forward. SCE&G has quantified the additional cost  
10 to be approximately \$7.1 million.

11 **Service Building Third Floor.** SCE&G has reevaluated its facilities  
12 requirements in light of emerging data concerning anticipated staffing levels of the  
13 Units when in operation and their maintenance and operational support  
14 requirements. This reevaluation identified the need to expand the Unit 2 and 3  
15 Service Building to provide additional shop space for the mechanical, electrical and  
16 instrumentation and control groups, as well as additional space to accommodate the  
17 site management and plant engineering support groups. This expansion will be  
18 accomplished by adding a third story to the building. SCE&G has quantified the  
19 cost of the expansion at approximately \$6.9 million.

20 **Training Staff Augmentation.** SCE&G has requested a Change Order from  
21 Westinghouse for the costs of Westinghouse staff to augment the V.C. Summer  
22 Units 2 and 3 Project NND Operations Training group. The change order would

1 cover the cost of a number of AP1000 Senior Reactor Operator (“SRO”) certified  
2 operations training instructors. These additional personnel are required to ensure  
3 that sufficient reactor operators and other staff can be trained and licensed on a  
4 schedule that supports initial fuel load for the Units. SCE&G has quantified the  
5 cost of the additional training personnel at approximately \$4.4 million.

6 **Escrow—Software & Documentation.** Under the EPC Contract, SCE&G  
7 has the right to require Westinghouse to deposit the source code associated with  
8 certain software for operating and maintaining the Units as well as certain facility  
9 documentation with a third party escrow agent. The escrow secures SCE&G’s right  
10 to access the source code and documentation if needed in the future. Under the EPC  
11 Contract, SCE&G is responsible for the cost associated with establishing and  
12 maintaining the escrow. SCE&G has exercised its right to require this escrow.  
13 SCE&G has quantified the cost of establishing the escrow to be approximately \$3.0  
14 million.

15 These are the five largest change orders included in the cost schedule updates  
16 in this filing. There are six other change orders, which Mr. Kochems will present  
17 in his testimony. All of them represent reasonable and prudent costs of the project.  
18 These changes orders are all necessary for successful completion of the project for  
19 the benefit of our customers.

**OWNER'S COST UPDATES**

**Q. PLEASE DESCRIBE HOW THE OWNER'S COSTS ARE CATEGORIZED.**

A. Owner's Costs include SCE&G's costs as Owner for such things as site-specific licensing and permitting of the Units; regulatory costs such as NRC fees; insurance, including workers compensation insurance for all workers on site, builder's risk insurance and transportation risk insurance; construction oversight and contract administration costs; the costs of recruiting and training of operating personnel for the Units; the costs of conducting the final acceptance testing of the Units and providing for interim maintenance of components of the Units as completed; the cost of NND facilities, information technology systems and equipment to support the project and the permanent staff of the Units; sales taxes; and other incidental costs for the site.

**Q. WHAT PART OF THE COSTS INCLUDED IN THESE UPDATES ARE OWNER'S COSTS?**

A. As Mr. Kochems testifies, updates in Owner's cost forecasts represent \$20.8 million of the requested updates. Of these costs, \$15.6 million are associated with the changes in schedule. \$8.0 million are associated with the additional costs of providing project oversight under Fluor's new project management structure and the work schedule that will include a full night shift and additional scheduled overtime. Other changes in Owner's costs, positive and negative, across all of the cost centers that support the project, when netted against each other, result in a \$2.8 million reversal of costs, *i.e.*, a cost decrease. The resulting Owner's cost forecast

1 presented here represents the reasonable and prudent costs of fulfilling our  
2 responsibilities as the Owner of this project.

3 **Q. WHAT ARE THE BUSINESS REASONS FOR THE OWNER'S COST**  
4 **INCREASE?**

5 A. As Mr. Kochems testifies in more detail, the majority of these Owner's cost  
6 increases are a result of the delay in the substantial completion dates of the Units.  
7 Personnel costs and other support costs cease to accrue to the capital cost of each  
8 Unit when that Unit is placed in service. The delay in the substantial completion  
9 date for each Unit means that such costs will accrue to each Unit's capital cost for  
10 approximately two additional months.

11 Additional labor-related costs represent \$11.0 million in delay-related, or  
12 approximately 71% of the \$15.6 million increase in Owner's costs due to delay.  
13 Non-labor related support costs make up the balance. They include items like  
14 insurance, Information Technology support, facilities, and NRC fees. These non-  
15 labor items will increase by approximately \$4.6 million due to the delay.

16 The Owner's cost increase also includes increases in personnel costs,  
17 facilities costs, additional software and equipment costs and other expenses that  
18 must be incurred for SCE&G to meet its obligations as Owner and COL licensee in  
19 a reasonable and prudent way. The addition of a night shift to the construction  
20 project will require SCE&G to increase its oversight expenses, since Owner's  
21 personnel will need to be on site to support and oversee an additional work shift. In  
22 addition, Fluor is implementing a new centralized construction management

1 organization. SCE&G intends to field a parallel organization to provide Owner's  
2 oversight to the project on the same basis. .

3 A mixed group of other changes in Owner's costs results in a reduction of  
4 budgeted costs, principally related to reductions in staffing or delays in hiring.  
5 Netted together, these increases and decreases result in a new Owner's cost forecast  
6 that is \$20.8 million higher than the amount previously approved.

7 **Q. DO YOU HAVE AN OPINION CONCERNING THE REASONABLENESS**  
8 **AND PRUDENCE OF THESE ADJUSTMENTS TO OWNER'S COST?**

9 **A.** For the reasons set forth in this testimony, as well as those set forth in Mr.  
10 Kissam's and Mr. Kochems' testimony, it is my opinion that the adjustments in the  
11 forecasts of Owner's costs for the NND project are reasonable and prudent costs of  
12 the Units. In my role as President of SCE&G for Generation and Transmission, I  
13 am familiar with the process by which these Owner's cost forecasts were created  
14 and the work that has gone into ensuring that the costs they reflect are reasonable  
15 and prudent costs of the project. It is my firm opinion that these costs reflect a  
16 necessary and valuable investment that the Company is making to protect the  
17 interest of its customers in these long-lived assets, as well as those of our partner  
18 Santee Cooper. They are prudent in every respect.

**CONCLUSION**

**Q. ARE THE UPDATES REQUESTED IN THIS PROCEEDING REASONABLE AND PRUDENT?**

**A.** Yes. The updates presented in this proceeding are reasonable and prudent. As President for Generation and Transmission, I am involved on an on-going basis with all major aspects of the construction project and was directly involved in the negotiations of both the EPC Contract Amendment and the decision to exercise the fixed-price option. The adjustments requested in this proceeding include adjustments to the construction schedule as well as to EPC costs and Owner's cost. They are adjustments that I know to represent reasonable and prudent changes in the cost and construction schedules for the Units. Making these adjustments is necessary to create the anticipated cost and construction schedules for the Units as required by the BLRA. Based on my knowledge of the project, and in my professional opinion, the adjustments are in no way the result of any lack of responsible and prudent management of the project by the Company or of imprudence by the Company in any respect. I ask the Commission to approve the updated capital cost and construction schedules as presented here and in Mr. Kochems' testimony.

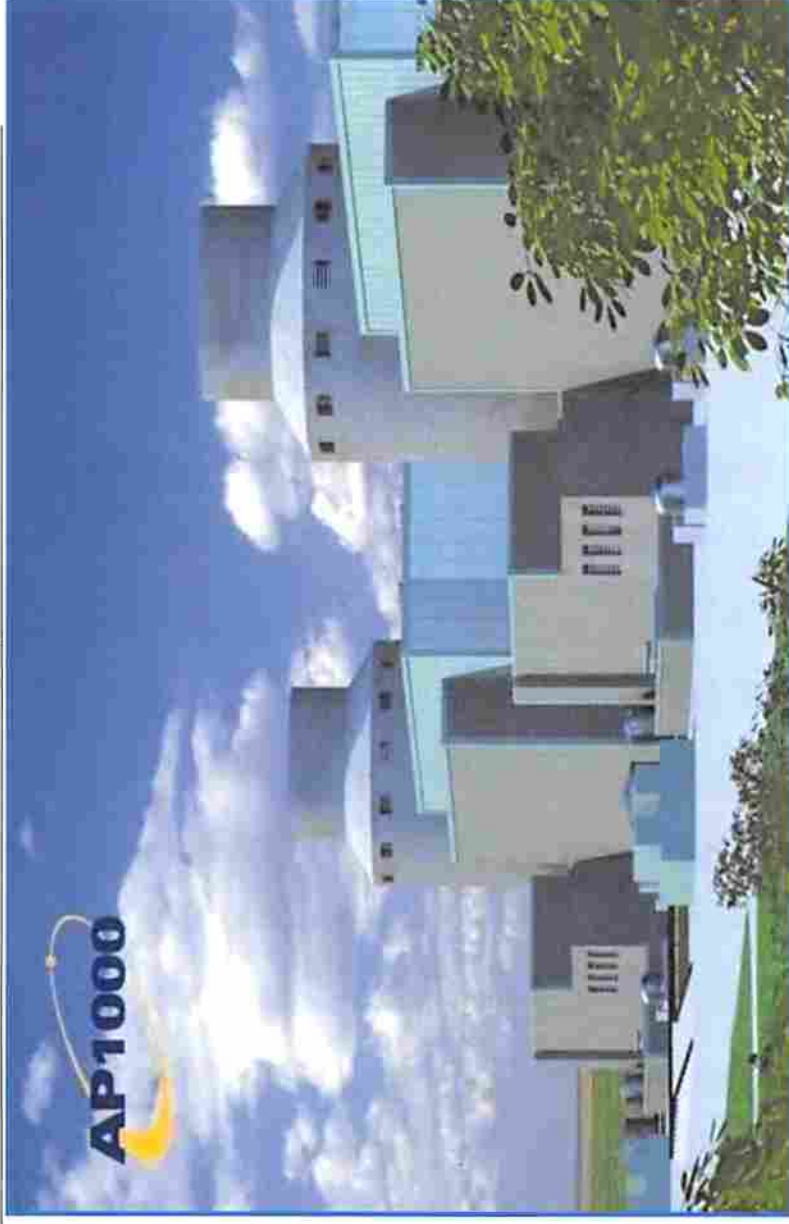
**Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

**A.** Yes, it does.

## New Nuclear Construction Update



1







Low Profile  
Cooling Tower

MAB

Unit 3

HLD

Unit 3 Turbine  
Bldg steel

CV Assembly Area

Unit 2 CV

Unit 2  
Turbine Bldg

Transformer Pads



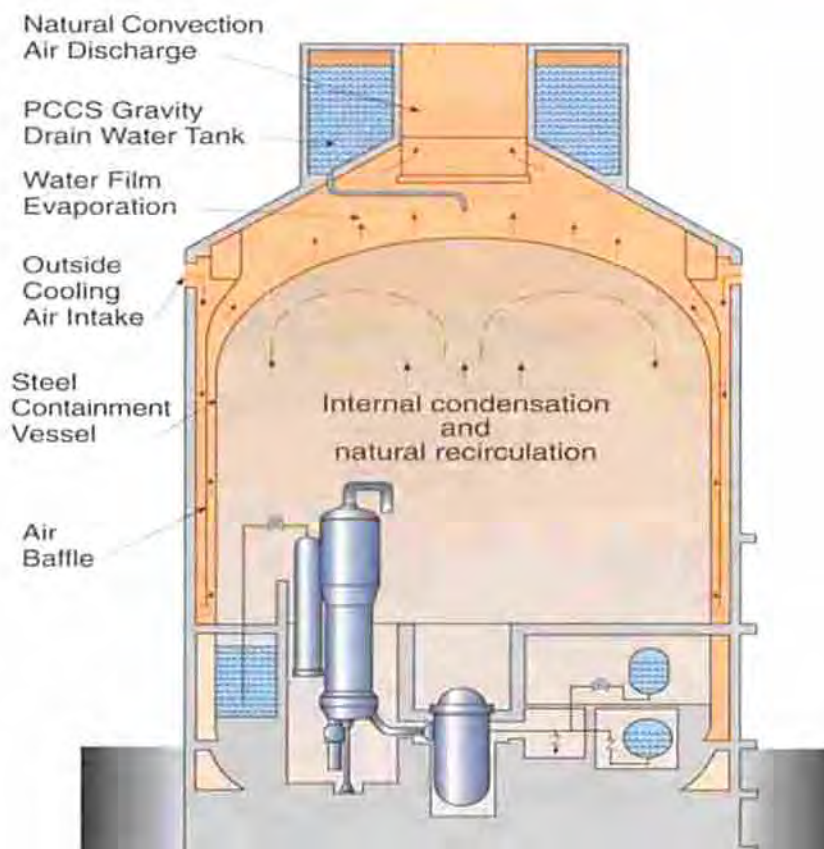
# Passive Containment Cooling System

Exhibit No. \_\_\_\_ (SAB-1)  
Page 3 of 27

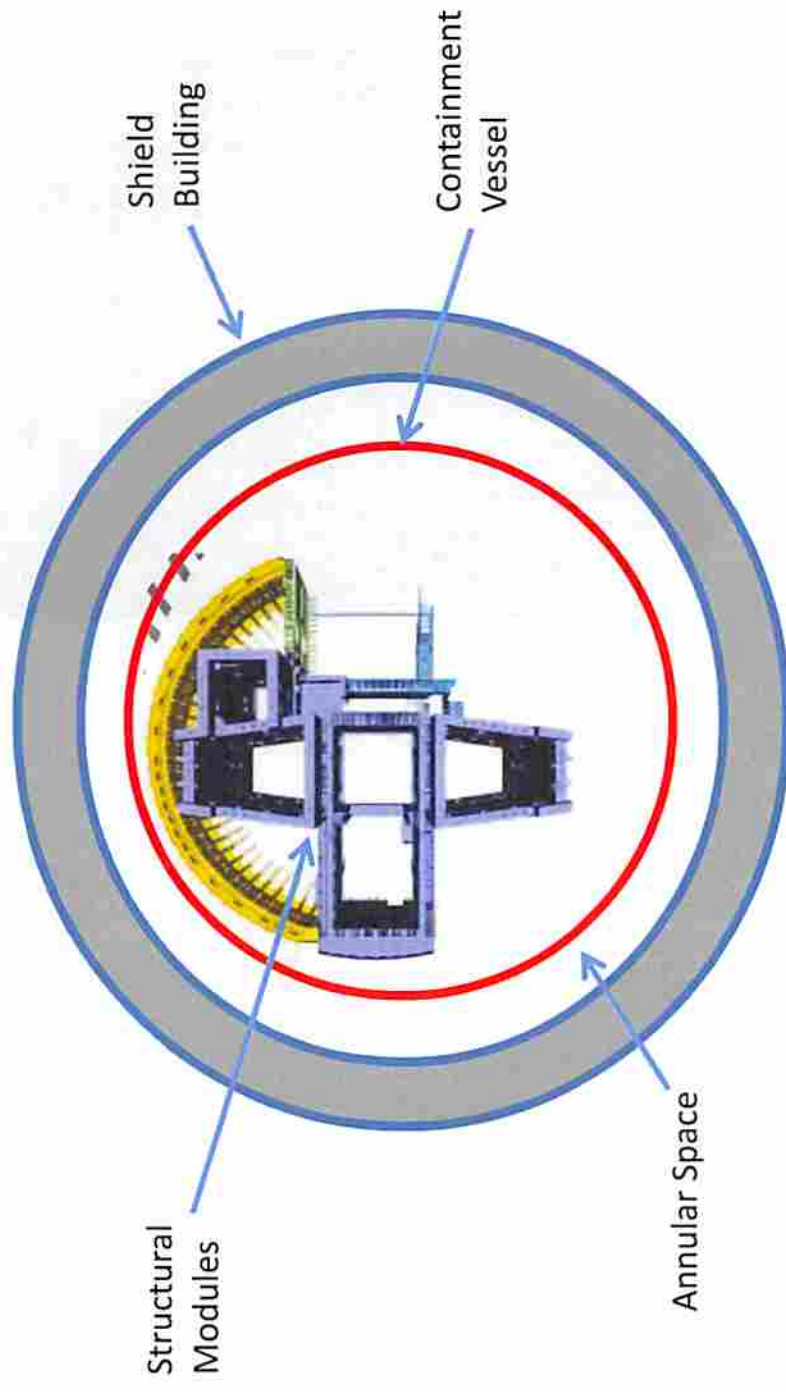
Relies on:

- Evaporation
- Precipitation
- Gravity
- Convection

No AC power  
needed

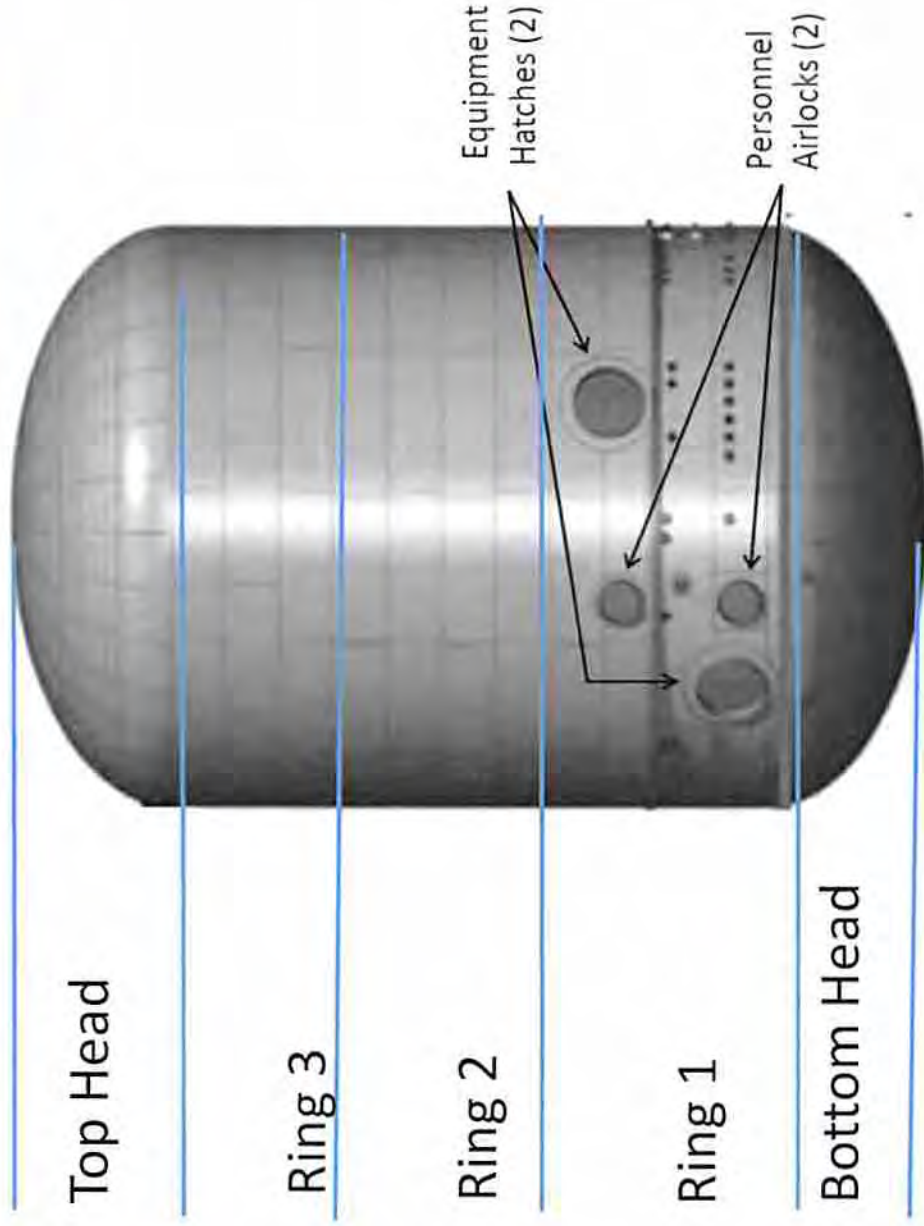


## Shield Building/Containment Vessel



# Containment Vessel

Exhibit No. (SAB-1)  
Page 5 of 27





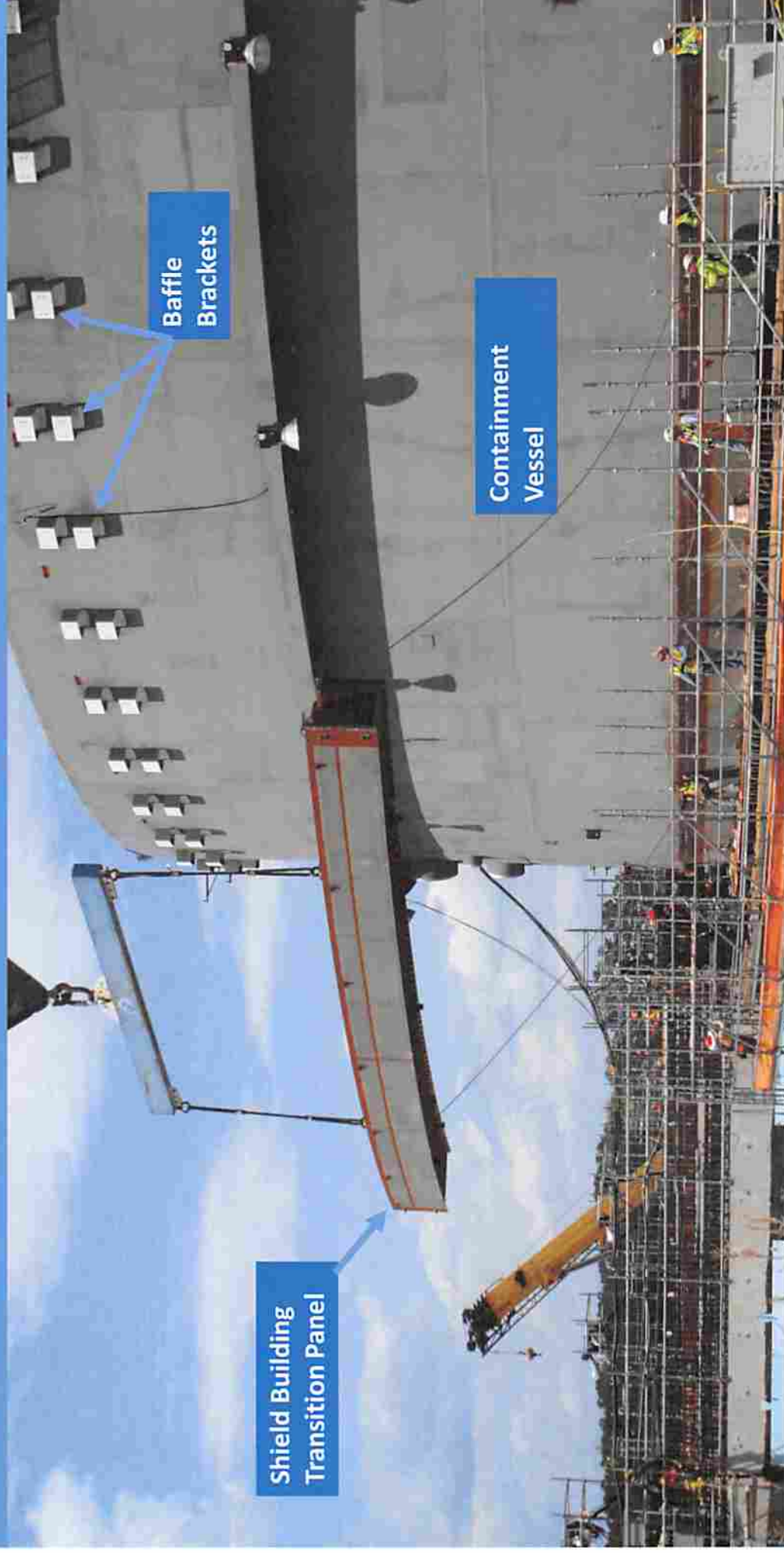
# Containment Vessel Fabrication Area

Exhibit No. (SAB-1)  
Page 6 of 27



## Unit 2 Shield Building Panels Set

Exhibit No. \_\_\_\_ (SAB-1)  
Page 7 of 27





## Unit 2 Shield Building with Concrete

Exhibit No. (SAB-1)  
Page 8 of 27



# Shield Building Course 2

Exhibit No. (SAB-1)  
Page 9 of 27





# Shield Building Course 4



Exhibit No. \_\_\_\_ (SAB-1)  
Page 11 of 27

# CA Modules



## CA01 Placed July 23

Weight: 2,400,000 Lbs

Dimensions: 95ft x 90ft x 80 ft

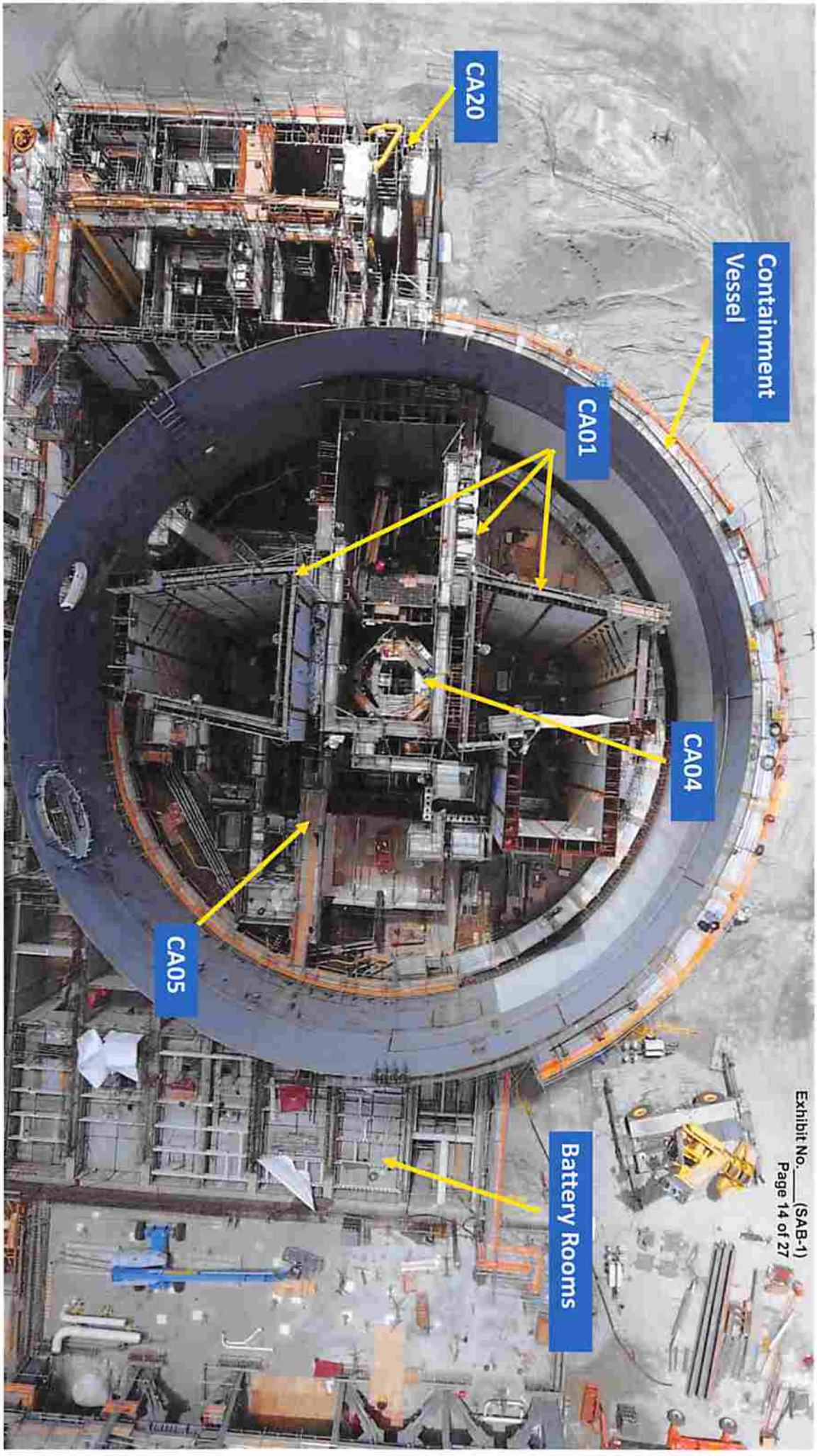




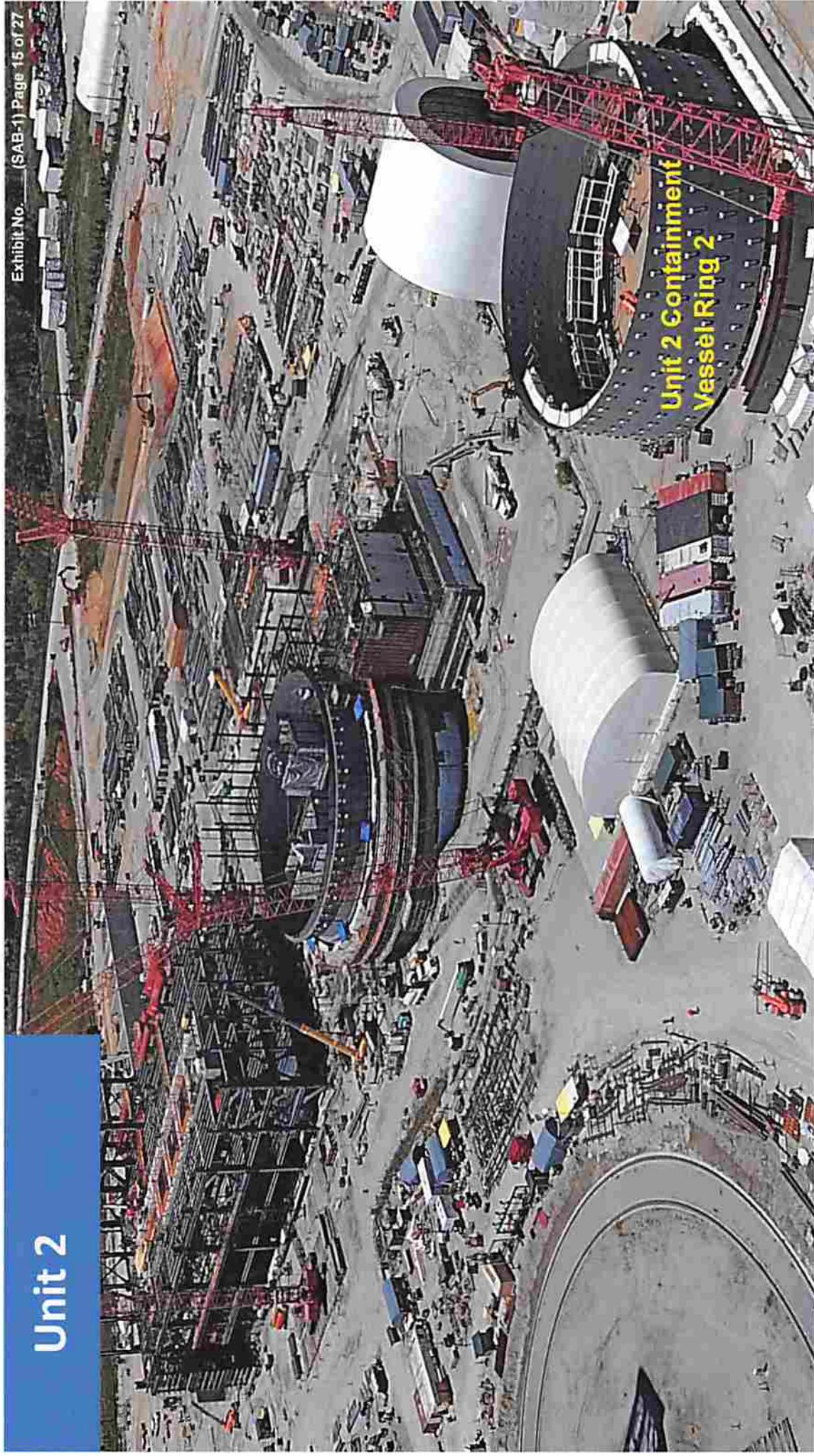
CA-03







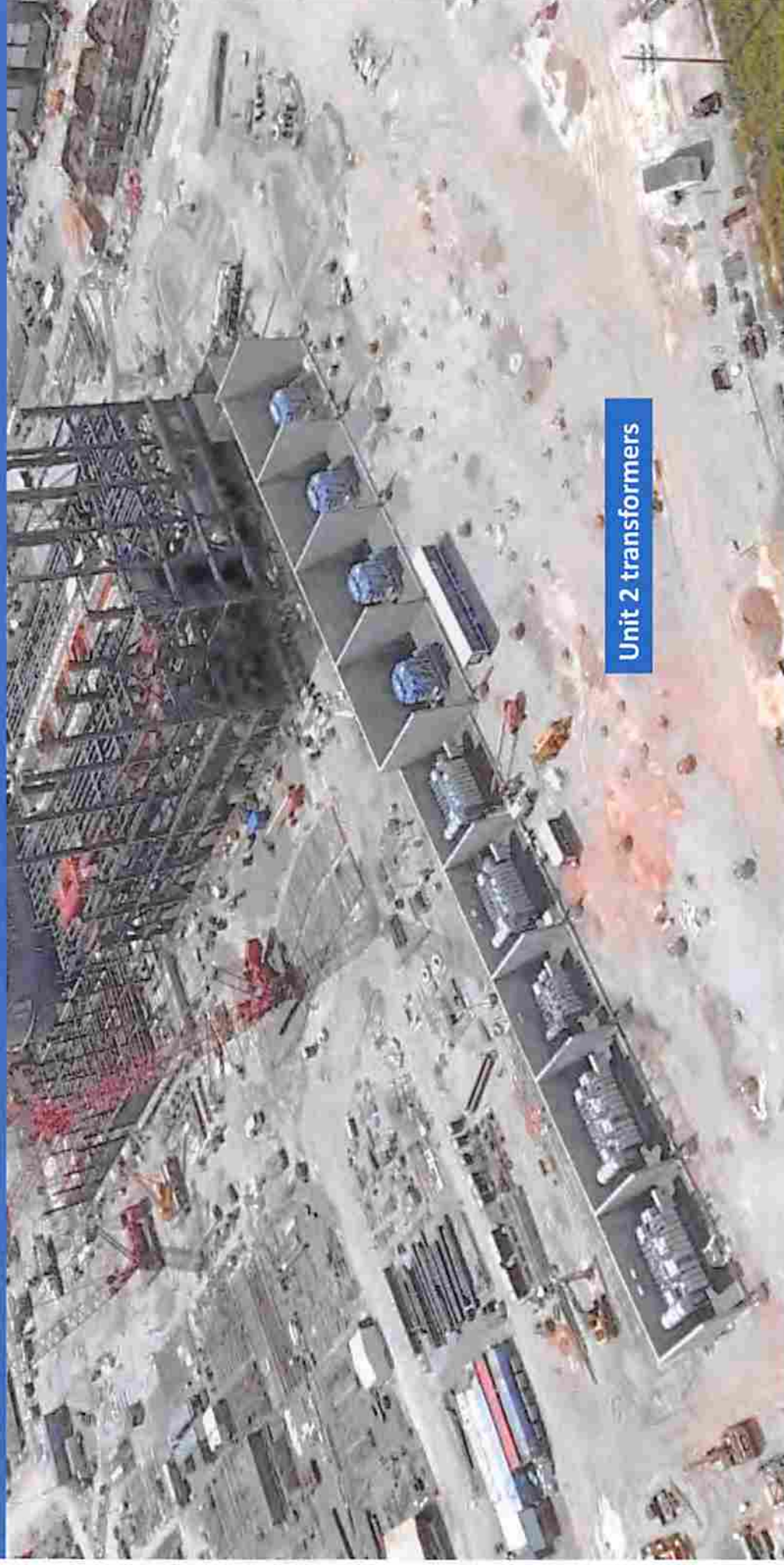






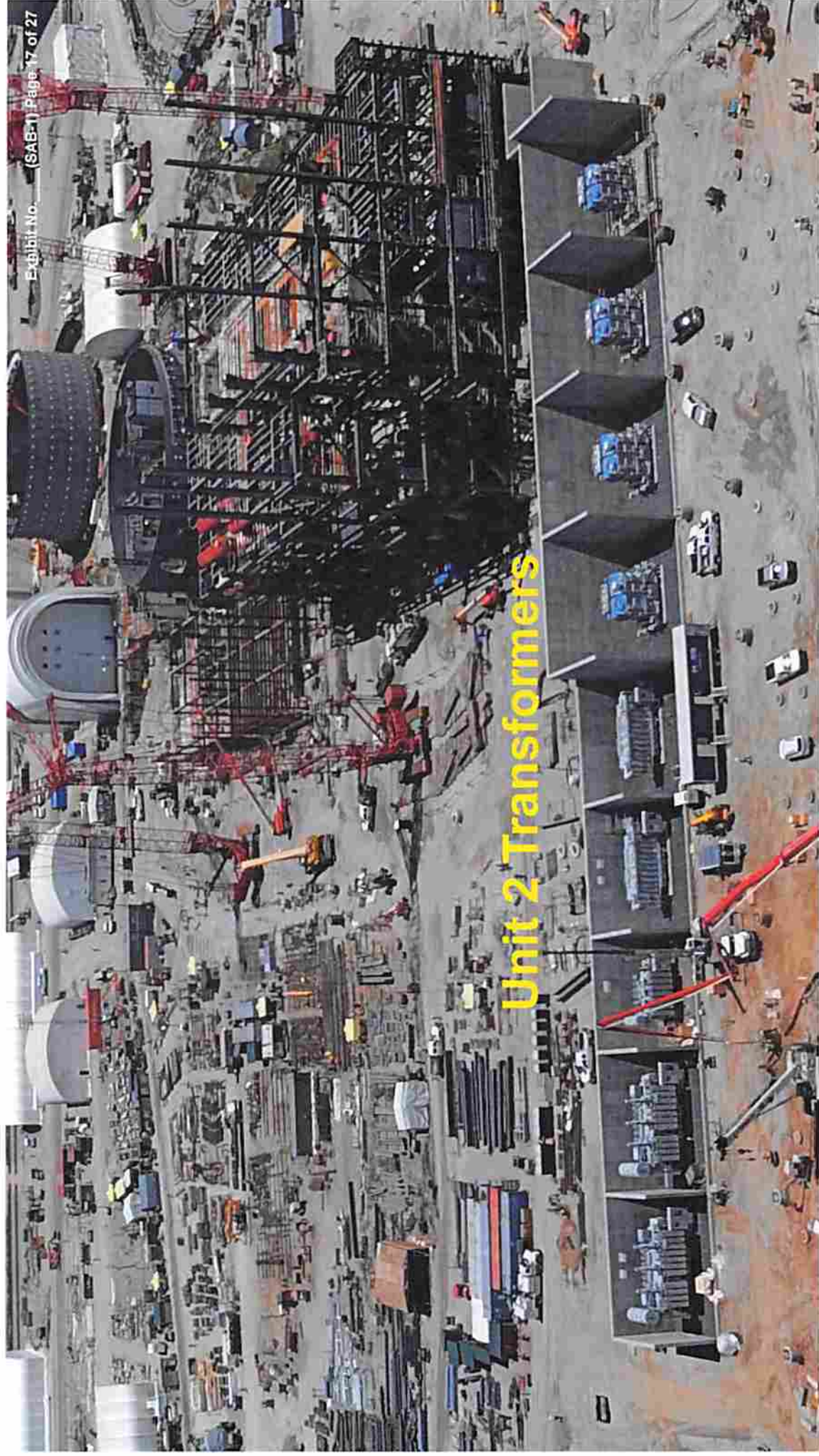
# Unit 2 transformers

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Unit 2 transformers





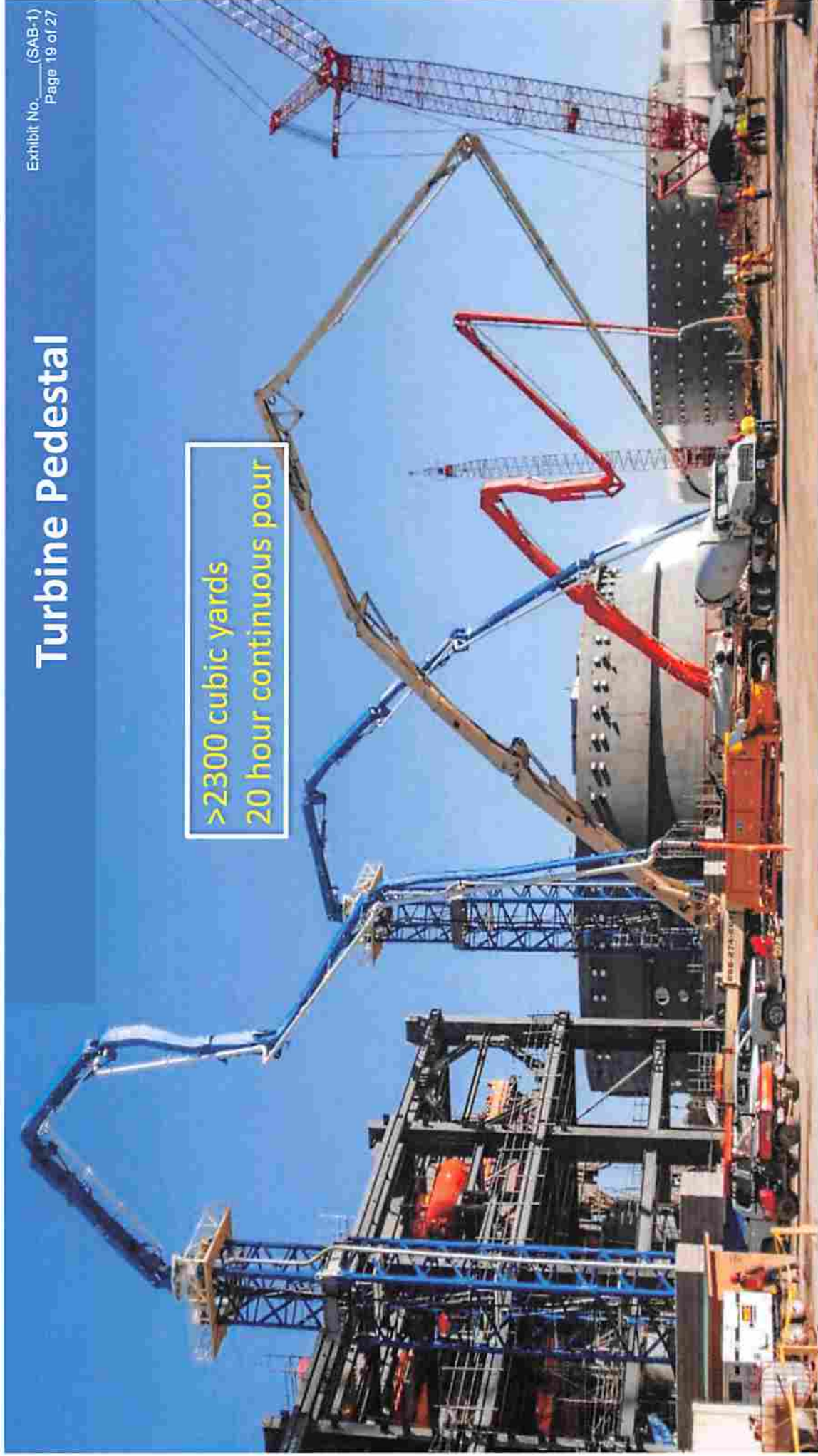






## Turbine Pedestal

>2300 cubic yards  
20 hour continuous pour



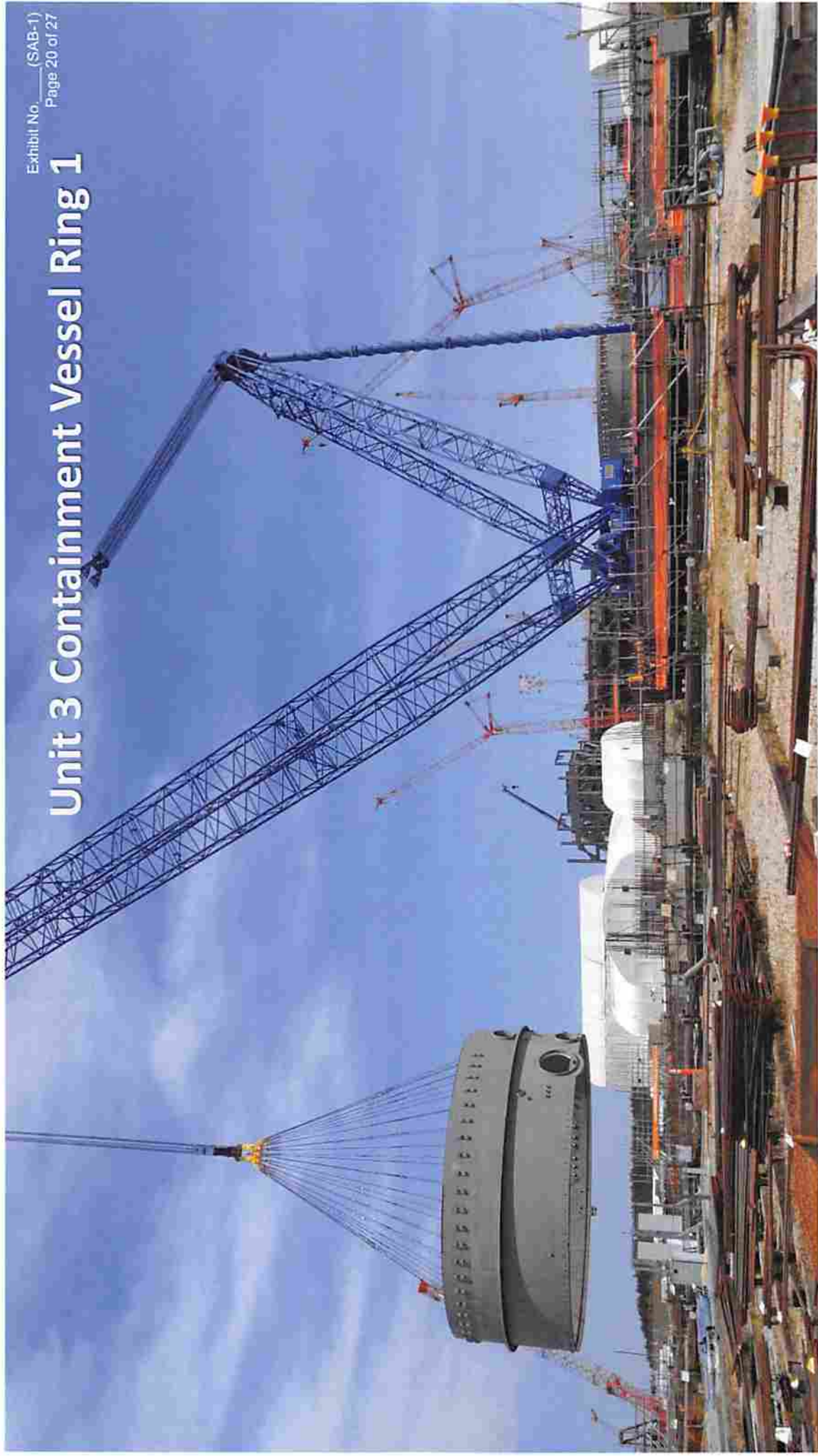
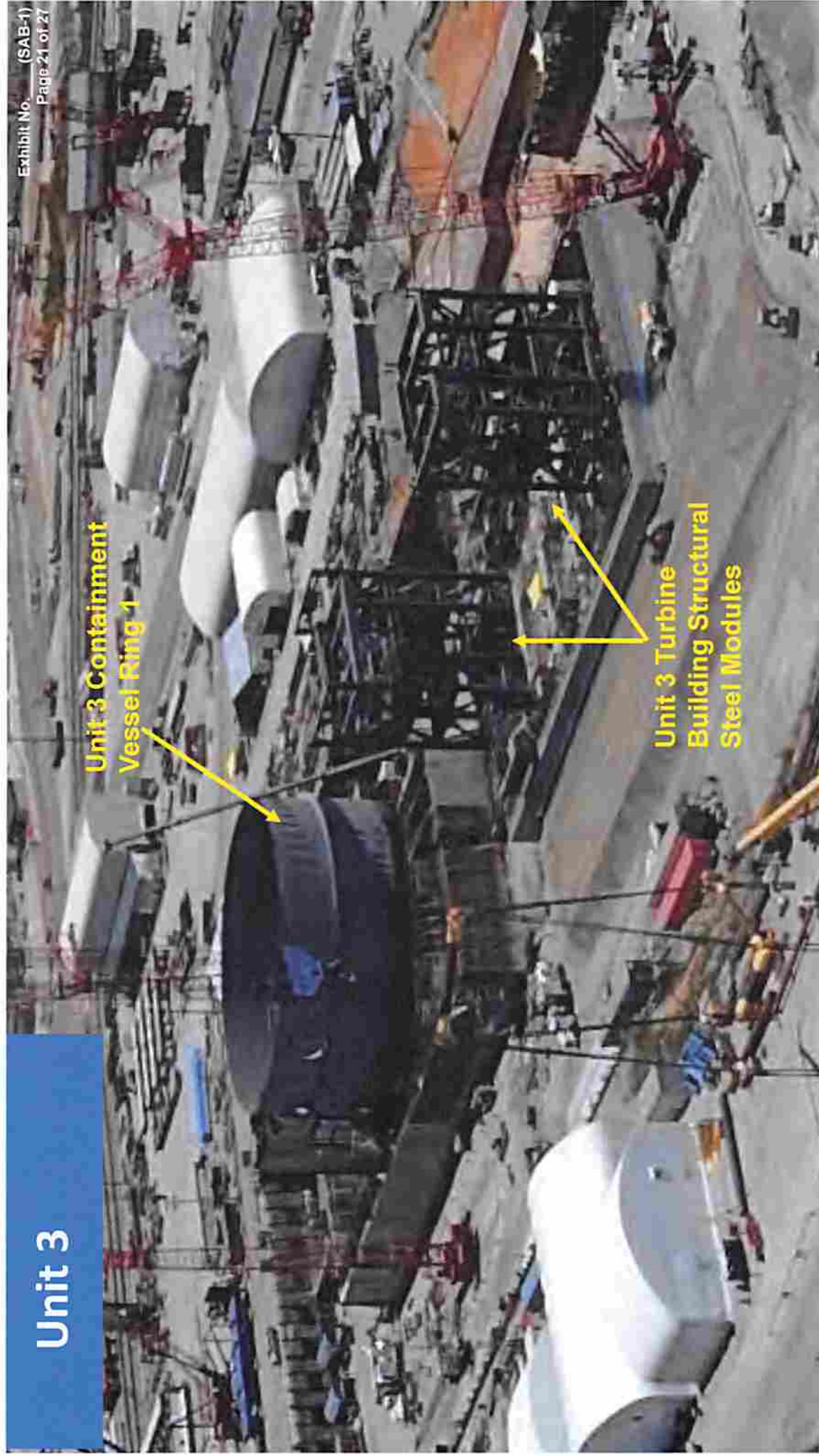


Exhibit No. (SAB-1)  
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# Unit 3 Containment Vessel Ring 1





Unit 3

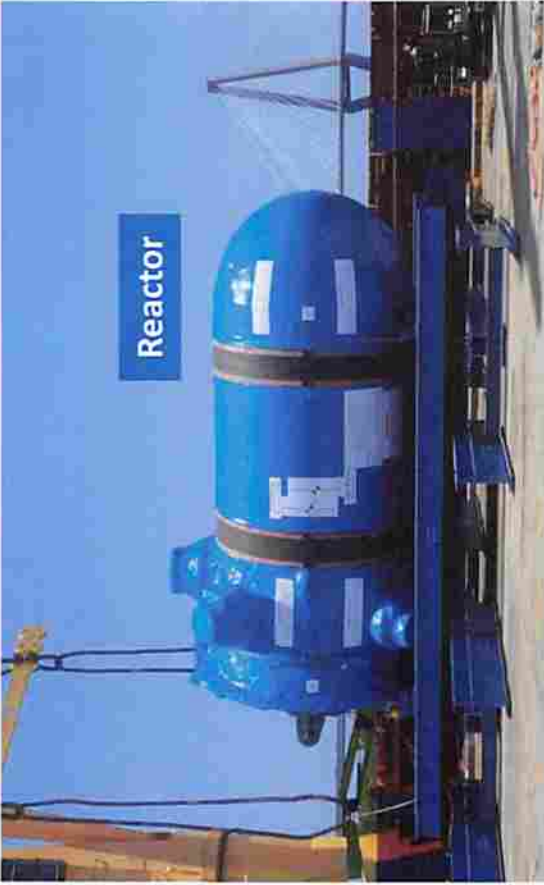
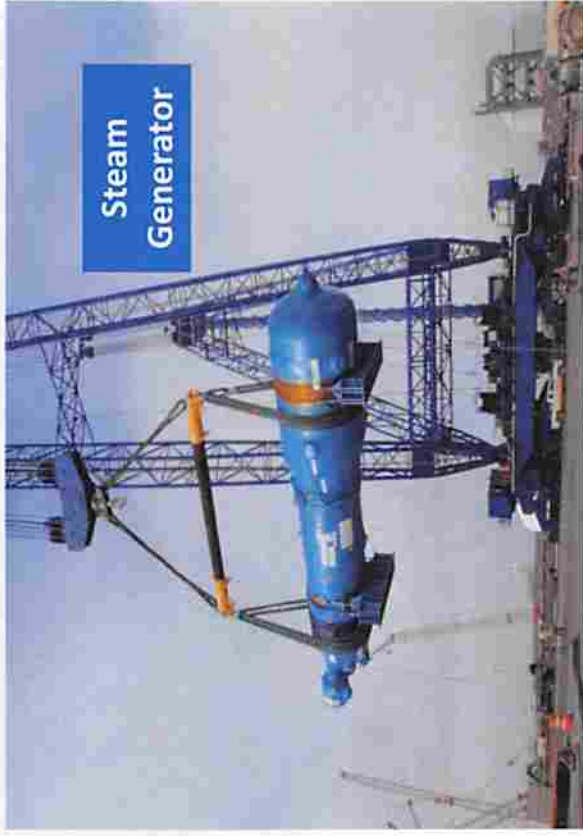
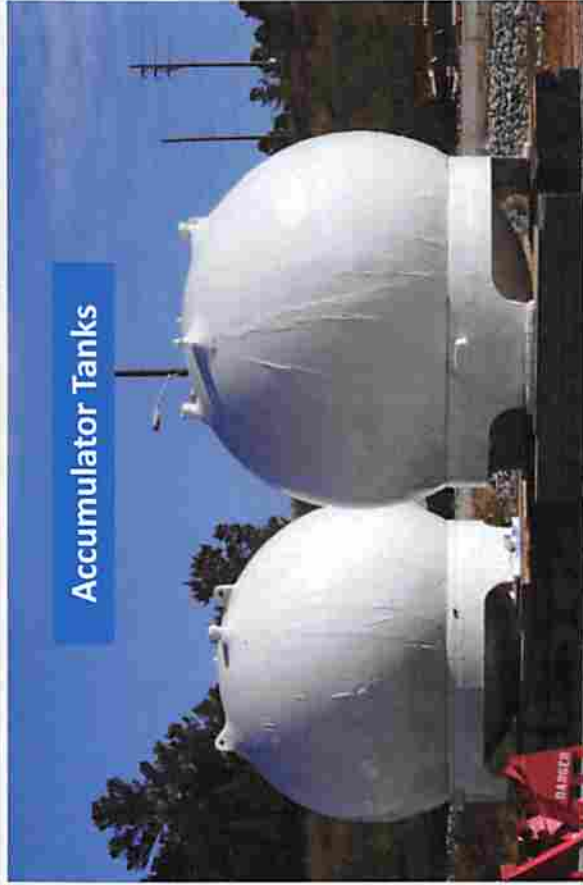


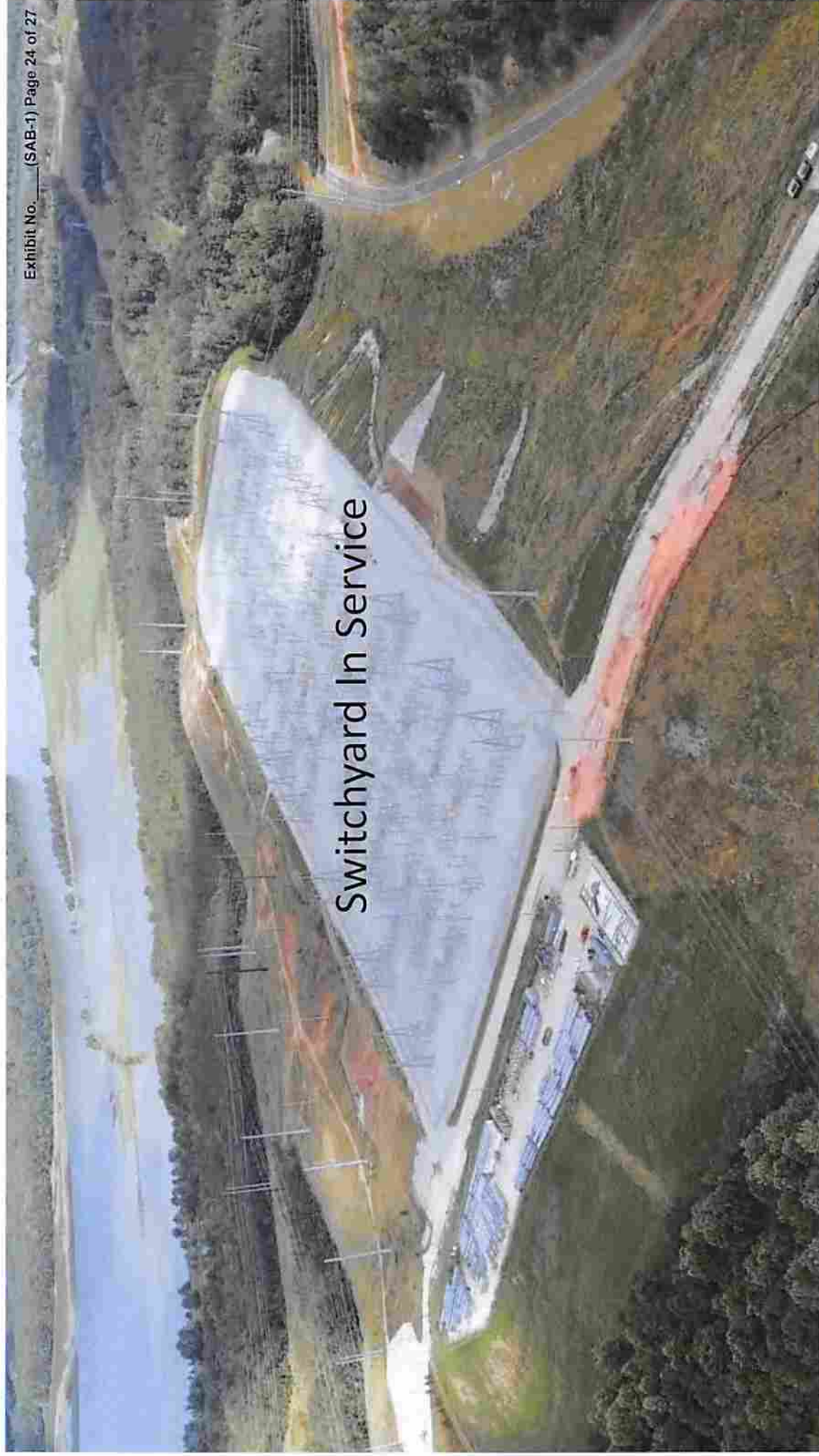
Exhibit No. (SAB-1)  
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## Cooling Towers Structurally Complete







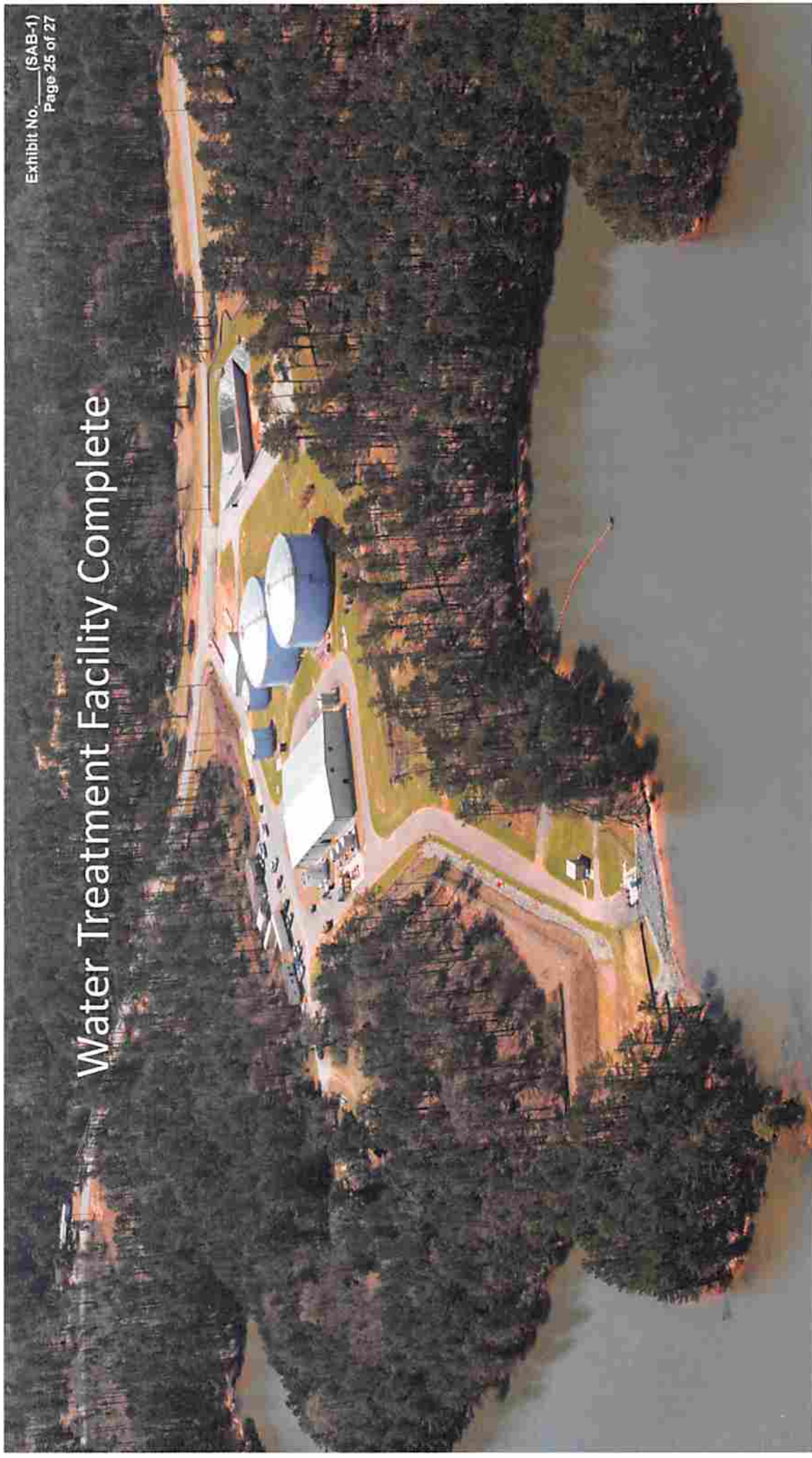


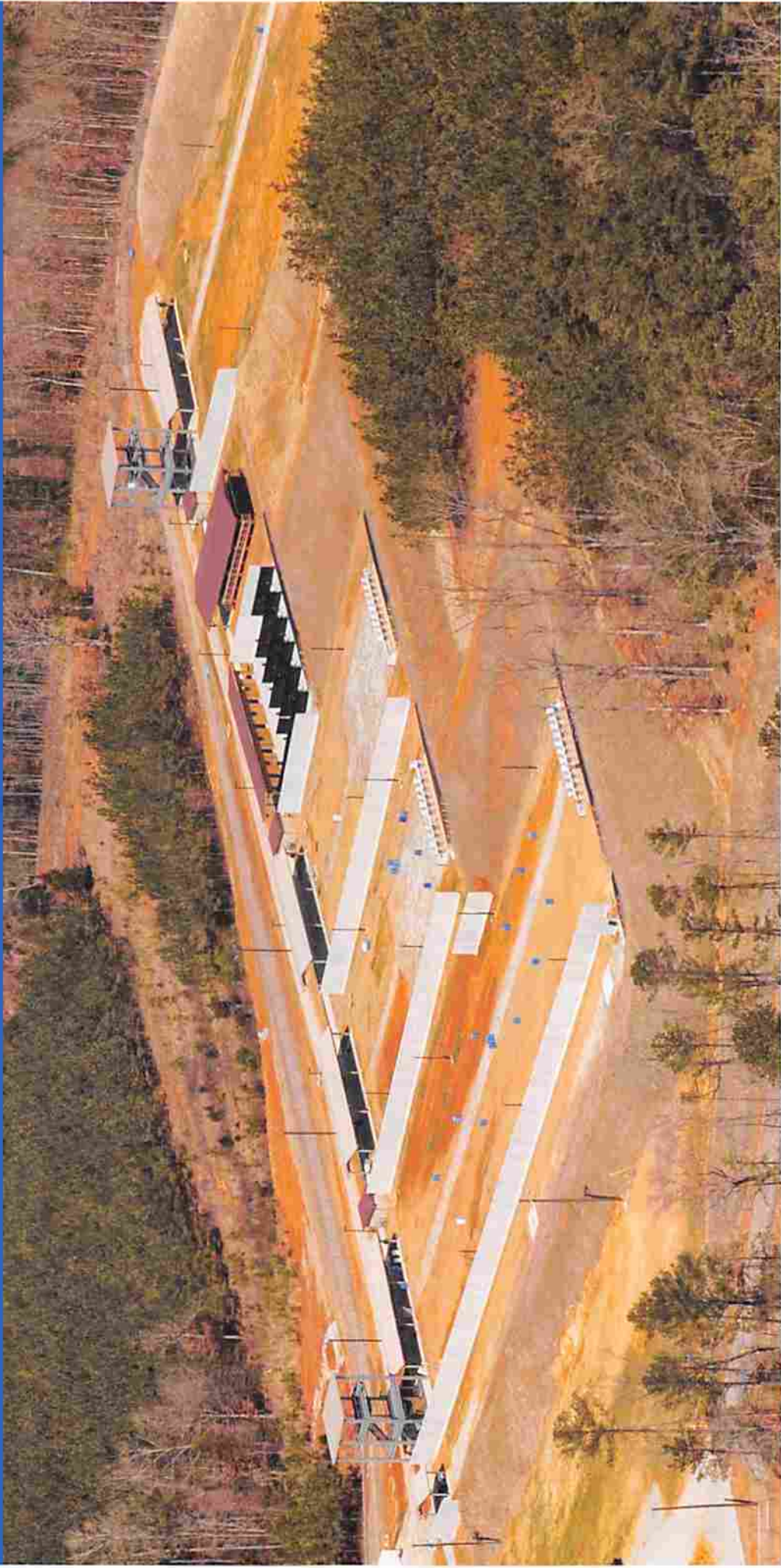
Exhibit No. (SAB-1)  
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## Water Treatment Facility Complete



## Firing Range In Service

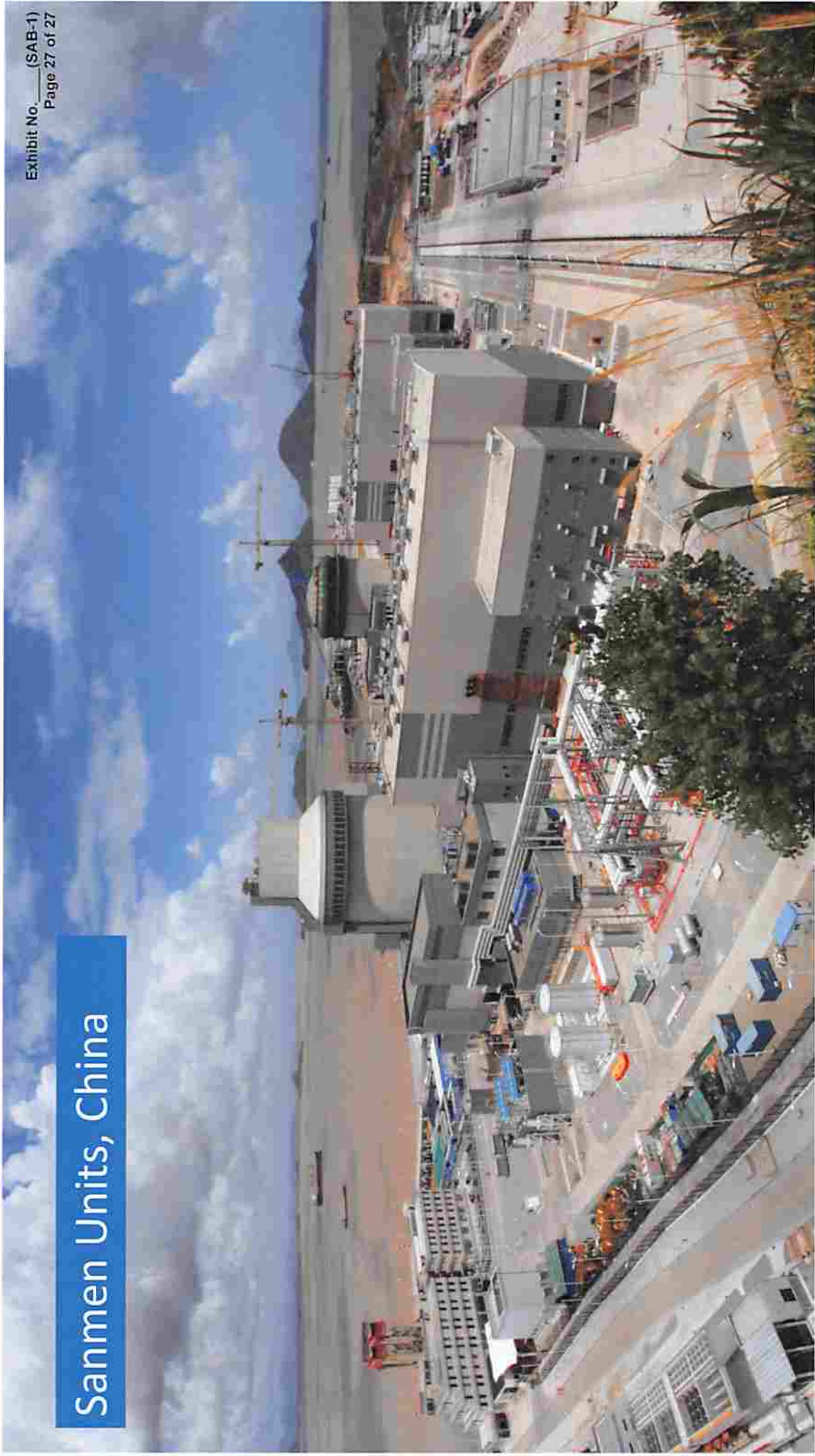
Exhibit No. (SAB-1)  
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## Sanmen Units, China

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Tracking ID	Order No. 2015-661 Description	Order No. 2015-661 Date	Revised Completion Date	Unit
1	Approve Engineering Procurement and Construction Agreement	Complete	Complete	
2	Issue POs to nuclear component fabricators for Units 2 & 3 Containment Vessels	Complete	Complete	
3	Contractor Issue PO to Passive Residual Heat Removal Heat Exchanger Fabricator - First Payment - Unit 2	Complete	Complete	
4	Contractor Issue PO to Accumulator Tank Fabricator - Unit 2	Complete	Complete	
5	Contractor Issue PO to Core Makeup Tank Fabricator - Units 2 & 3	Complete	Complete	
6	Contractor Issue PO to Squib Valve Fabricator - Units 2 & 3	Complete	Complete	
7	Contractor Issue PO to Steam Generator Fabricator - Units 2 & 3	Complete	Complete	
8	Contractor Issue Long Lead Material PO to Reactor Coolant Pump Fabricator - Units 2 & 3	Complete	Complete	
9	Contractor Issue PO to Pressurizer Fabricator - Units 2 & 3	Complete	Complete	
10	Contractor Issue PO to Reactor Coolant Loop Pipe Fabricator - First Payment - Units 2 & 3	Complete	Complete	
11	Reactor Vessel Internals - Issue Long Lead Material PO to Fabricator - Units 2 & 3	Complete	Complete	
12	Contractor Issue Long Lead Material PO to Reactor Vessel Fabricator - Units 2 & 3	Complete	Complete	
13	Contractor Issue PO to Integrated Head Package Fabricator - Units 2 & 3	Complete	Complete	
14	Control Rod Drive Mechanism Issue PO for Long Lead Material to Fabricator - Units 2 & 3 - first payment	Complete	Complete	
15	Issue POs to nuclear component fabricators for Nuclear Island structural CA20 Modules	Complete	Complete	
16	Start Site Specific and balance of plant detailed design	Complete	Complete	
17	Instrumentation & Control Simulator - Contractor Place Notice to Proceed - Units 2 & 3	Complete	Complete	
18	Steam Generator - Issue Final PO to Fabricator for Units 2 & 3	Complete	Complete	
19	Reactor Vessel Internals - Contractor Issue PO for Long Lead Material (Heavy Plate and Heavy Forgings) to Fabricator - Units 2 & 3	Complete	Complete	
20	Contractor Issue Final PO to Reactor Vessel Fabricator - Units 2 & 3	Complete	Complete	
21	Variable Frequency Drive Fabricator Issue Transformer PO - Units 2 & 3	Complete	Complete	
22	Start clearing, grubbing and grading	Complete	Complete	
23	Core Makeup Tank Fabricator Issue Long Lead Material PO - Units 2 & 3	Complete	Complete	
24	Accumulator Tank Fabricator Issue Long Lead Material PO - Units 2 & 3	Complete	Complete	
25	Pressurizer Fabricator Issue Long Lead Material PO - Units 2 & 3	Complete	Complete	
26	Reactor Coolant Loop Pipe - Contractor Issue PO to Fabricator - Second Payment - Units 2 & 3	Complete	Complete	
27	Integrated Head Package - Issue PO to Fabricator - Units 2 and 3 - second payment	Complete	Complete	
28	Control Rod Drive Mechanisms - Contractor Issue PO for Long Lead Material to Fabricator - Units 2 & 3	Complete	Complete	
29	Contractor Issue PO to Passive Residual Heat Removal Heat Exchanger Fabricator - Second Payment - Units 2 & 3	Complete	Complete	
30	Start Parr Road intersection work	Complete	Complete	
31	Reactor Coolant Pump - Issue Final PO to Fabricator - Units 2 & 3	Complete	Complete	
32	Integrated Head Packages Fabricator Issue Long Lead Material PO - Units 2 & 3	Complete	Complete	
33	Design Finalization Payment 3	Complete	Complete	
34	Start site development	Complete	Complete	
35	Contractor Issue PO to Turbine Generator Fabricator - Units 2 & 3	Complete	Complete	
36	Contractor Issue PO to Main Transformers Fabricator - Units 2 & 3	Complete	Complete	
37	Core Makeup Tank Fabricator Notice to Contractor Receipt of Long Lead Material - Units 2 & 3	Complete	Complete	
38	Design Finalization Payment 4	Complete	Complete	
39	Turbine Generator Fabricator Issue PO for Condenser Material - Unit 2	Complete	Complete	
40	Reactor Coolant Pump Fabricator Issue Long Lead Material Lot 2 - Units 2 & 3	Complete	Complete	
41	Passive Residual Heat Removal Heat Exchanger Fabricator Receipt of Long Lead Material - Units 2 & 3	Complete	Complete	
42	Design Finalization Payment 5	Complete	Complete	
43	Start erection of construction buildings, to include craft facilities for personnel, tools, equipment; first aid facilities; field offices for site management and support personnel; temporary warehouses; and construction hiring office	Complete	Complete	
44	Reactor Vessel Fabricator Notice to Contractor of Receipt of Flange Nozzle Shell Forging - Unit 2	Complete	Complete	
45	Design Finalization Payment 6	Complete	Complete	
46	Instrumentation and Control Simulator - Contractor Issue PO to Subcontractor for Radiation Monitor System - Units 2 & 3	Complete	Complete	
47	Reactor Vessel Internals - Fabricator Start Fit and Welding of Core Shroud Assembly - Unit 2	Complete	Complete	
48	Turbine Generator Fabricator Issue PO for Moisture Separator Reheater/Feedwater Heater Material - Unit 2	Complete	Complete	
49	Reactor Coolant Loop Pipe Fabricator Acceptance of Raw Material - Unit 2	Complete	Complete	



Tracking ID	Order No. 2015-661 Description	Order No. 2015-661 Date	Revised Completion Date	Unit
50	Reactor Vessel Internals - Fabricator Start Weld Neutron Shield Spacer Pads to Assembly - Unit 2	Complete	Complete	
51	Control Rod Drive Mechanisms - Fabricator to Start Procurement of Long Lead Material - Unit 2	Complete	Complete	
52	Contractor Notified that Pressurizer Fabricator Performed Cladding on Bottom Head - Unit 2	Complete	Complete	
53	Start excavation and foundation work for the standard plant for Unit 2	Complete	Complete	
54	Steam Generator Fabricator Notice to Contractor of Receipt of 2nd Steam Generator Tubesheet Forging - Unit 2	Complete	Complete	
55	Reactor Vessel Fabricator Notice to Contractor of Outlet Nozzle Welding to Flange Nozzle Shell Completion - Unit 2	Complete	Complete	
56	Turbine Generator Fabricator Notice to Contractor Condenser Fabrication Started - Unit 2	Complete	Complete	
57	Complete preparations for receiving the first module on site for Unit 2	Complete	Complete	
58	Steam Generator Fabricator Notice to Contractor of Receipt of 1st Steam Generator Transition Cone Forging - Unit 2	Complete	Complete	
59	Reactor Coolant Pump Fabricator Notice to Contractor of Manufacturing of Casing Completion - Unit 2	Complete	Complete	
60	Reactor Coolant Loop Pipe Fabricator Notice to Contractor of Machining, Heat Treating & Non-Destructive Testing Completion - Unit 2	Complete	Complete	
61	Core Makeup Tank Fabricator Notice to Contractor of Satisfactory Completion of Hydrotest - Unit 2	Complete	Complete	
62	Polar Crane Fabricator Issue PQ for Main Hoist Drum and Wire Rope - Units 2 & 3	Complete	Complete	
63	Control Rod Drive Mechanisms - Fabricator to Start Procurement of Long Lead Material - Unit 3	Complete	Complete	
64	Turbine Generator Fabricator Notice to Contractor Condenser Ready to Ship - Unit 2	Complete	Complete	
65	Start placement of mud mat for Unit 2	Complete	Complete	
66	Steam Generator Fabricator Notice to Contractor of Receipt of 1st Steam Generator Tubing - Unit 2	Complete	Complete	
67	Pressurizer Fabricator Notice to Contractor of Welding of Upper and Intermediate Shells Completion - Unit 2	Complete	Complete	
68	Reactor Vessel Fabricator Notice to Contractor of Closure Head Cladding Completion - Unit 3	Complete	Complete	
69	Begin Unit 2 first nuclear concrete placement	Complete	Complete	
70	Reactor Coolant Pump Fabricator Notice to Contractor of Stator Core Completion - Unit 2	Complete	Complete	
71	Fabricator Start Fit and Welding of Core Shroud Assembly - Unit 2	Complete	Complete	
72	Steam Generator Fabricator Notice to Contractor of Completion of 1st Steam Generator Tubing Installation - Unit 2	Complete	Complete	
73	Reactor Coolant Loop Pipe - Shipment of Equipment to Site - Unit 2	Complete	Complete	
74	Control Rod Drive Mechanism - Ship Remainder of Equipment (Latch Assembly & Rod Travel Housing) to Head Supplier - Unit 2	Complete	Complete	
75	Pressurizer Fabricator Notice to Contractor of Welding of Lower Shell to Bottom Head Completion - Unit 2	Complete	Complete	
76	Steam Generator Fabricator Notice to Contractor of Completion of 2nd Steam Generator Tubing Installation - Unit 2	Complete	Complete	
77	Design Finalization Payment 14	Complete	Complete	
78	Set module CA04 for Unit 2	Complete	Complete	
79	Passive Residual Heat Removal Heat Exchanger Fabricator Notice to Contractor of Completion of Tubing - Unit 2	Complete	Complete	
80	Passive Residual Heat Removal Heat Exchanger Fabricator Notice to Contractor of Completion of Tubing - Unit 2	Complete	Complete	
81	Polar Crane Fabricator Notice to Contractor of Girder Fabrication Completion - Unit 2	Complete	Complete	
82	Turbine Generator Fabricator Notice to Contractor Condenser Ready to Ship - Unit 3	Complete	Complete	
83	Set Containment Vessel Ring #1 for Unit 2	Complete	Complete	
84	Reactor Coolant Pump Fabricator Delivery of Casings to Port of Export - Unit 2	Complete	Complete	
85	Reactor Coolant Pump Fabricator Notice to Contractor of Stator Core Completion - Unit 3	Complete	Complete	
86	Reactor Vessel Fabricator Notice to Contractor of Receipt of Core Shell Forging - Unit 3	Complete	Complete	
87	Contractor Notified that Pressurizer Fabricator Performed Cladding on Bottom Head - Unit 3	Complete	Complete	
88	Set Nuclear Island structural module CA03 for Unit 2	12/28/2015	6/20/2016	Unit 2
89	Squib Valve Fabricator Notice to Contractor of Completion of Assembly and Test for Squib Valve Hardware - Unit 2	Complete	Complete	
90	Accumulator Tank Fabricator Notice to Contractor of Satisfactory Completion of Hydrotest - Unit 3	Complete	Complete	
91	Polar Crane Fabricator Notice to Contractor of Electric Panel Assembly Completion - Unit 2	Complete	Complete	
92	Start containment large bore pipe supports for Unit 2	Complete	Complete	
93	Integrated Head Package - Shipment of Equipment to Site - Unit 2	Complete	Complete	
94	Reactor Coolant Pump Fabricator Notice to Contractor of Final Stator Assembly Completion - Unit 2	Complete	Complete	
95	Steam Generator Fabricator Notice to Contractor of Completion of 2nd Steam Generator Tubing Installation - Unit 3	Complete	Complete	
96	Steam Generator Fabricator Notice to Contractor of Satisfactory Completion of 1st Steam Generator Hydrotest - Unit 2	Complete	Complete	
97	Start concrete fill of Nuclear Island structural modules CA01 and CA02 for Unit 2	7/18/2016	12/10/2016	Unit 2
98	Passive Residual Heat Removal Heat Exchanger - Delivery of Equipment to Port of Entry - Unit 2	Complete	Complete	
99	Refueling Machine Fabricator Notice to Contractor of Satisfactory Completion of Factory Acceptance Test - Unit 2	Complete	Complete	

Tracking ID	Order No. 2015-661 Description	Order No. 2015-661 Date	Revised Completion Date	Unit
100	Deliver Reactor Vessel Internals to Port of Export - Unit 2	Complete	Complete	
101	Set Unit 2 Containment Vessel #3	8/23/2016	2/15/2017	Unit 2
102	Steam Generator - Contractor Acceptance of Equipment at Port of Entry - Unit 2	Complete	Complete	
103	Turbine Generator Fabricator Notice to Contractor Turbine Generator Ready to Ship - Unit 2	Complete	Complete	
104	Pressurizer Fabricator Notice to Contractor of Satisfactory Completion of Hydrotest - Unit 3	Complete	Complete	
105	Polar Crane - Shipment of Equipment to Site - Unit 2	12/31/2015	6/30/2016	Unit 2
106	Receive Unit 2 Reactor Vessel on site from fabricator	Complete	Complete	
107	Set Unit 2 Reactor Vessel	8/9/2016	9/2/2016	Unit 2
108	Steam Generator Fabricator Notice to Contractor of Completion of 2nd Channel Head to Tubesheet Assembly Welding - Unit 3	Complete	Complete	
109	Reactor Coolant Pump Fabricator Notice to Contractor of Final Stator Assembly Completion - Unit 3	10/30/2015	6/30/2016	Unit 3
110	Reactor Coolant Pump - Shipment of Equipment to Site (2 Reactor Coolant Pumps) - Unit 2	5/30/2016	2/28/2017	Unit 2
111	Place first nuclear concrete for Unit 3	Complete	Complete	
112	Set Unit 2 Steam Generator	10/10/2016	11/17/2016	Unit 2
113	Main Transformers Ready to Ship - Unit 2	Complete	Complete	
114	Complete Unit 3 Steam Generator Hydrotest at fabricator	Complete	Complete	
115	Set Unit 2 Containment Vessel Bottom Head on basemat legs	Complete	Complete	
116	Set Unit 2 Pressurizer Vessel	8/23/2016	5/11/2017	Unit 2
117	Reactor Coolant Pump Fabricator Notice to Contractor of Satisfactory Completion of Factory Acceptance Test - Unit 3	1/31/2017	7/1/2017	Unit 3
118	Deliver Reactor Vessel Internals to Port of Export - Unit 3	12/31/2016	8/11/2017	Unit 3
119	Main Transformers Fabricator Issue PO for Material - Unit 3	Complete	Complete	
120	Complete welding of Unit 2 Passive Residual Heat Removal System piping	1/16/2017	5/19/2017	Unit 2
121	Steam Generator - Contractor Acceptance of Equipment at Port of Entry - Unit 3	1/30/2016	10/30/2016	Unit 3
122	Refueling Machine - Shipment of Equipment to Site - Unit 3	3/27/2016	5/15/2017	Unit 3
123	Set Unit 2 Polar Crane	12/19/2016	6/28/2017	Unit 2
124	Reactor Coolant Pumps - Shipment of Equipment to Site - Unit 3	4/30/2017	9/1/2017	Unit 3
125	Main Transformers Ready to Ship - Unit 3	Complete	Complete	
126	Spent Fuel Storage Rack - Shipment of Last Rack Module - Unit 3	Complete	Complete	
127	Start electrical cable pulling in Unit 2 Auxiliary Building	11/29/2016	10/6/2016	Unit 2
128	Complete Unit 2 Reactor Coolant System cold hydro	2/19/2018	8/16/2018	Unit 2
129	Activate class 1E DC power in Unit 2 Auxiliary Building	6/22/2017	11/1/2017	Unit 2
130	Complete Unit 2 hot functional test	5/23/2018	11/17/2018	Unit 2
131	Install Unit 3 ring 3 for containment vessel	2/27/2017	11/29/2017	Unit 3
132	Load Unit 2 nuclear fuel	12/21/2018	5/10/2019	Unit 2
133	Unit 2 Substantial Completion	6/19/2019	8/31/2019	Unit 2
134	Set Unit 3 Reactor Vessel	5/26/2017	12/14/2017	Unit 3
135	Set Unit 3 Steam Generator #2	9/22/2017	2/21/2018	Unit 3
136	Set Unit 3 Pressurizer Vessel	11/27/2017	3/30/2018	Unit 3
137	Complete welding of Unit 3 Passive Residual Heat Removal System piping	1/29/2018	4/11/2018	Unit 3
138	Set Unit 3 polar crane	12/18/2017	5/24/2018	Unit 3
139	Start Unit 3 Shield Building roof slab rebar placement	5/11/2018	7/7/2019	Unit 3
140	Start Unit 3 Auxiliary Building electrical cable pulling	6/23/2017	5/18/2017	Unit 3
141	Activate Unit 3 Auxiliary Building class 1E DC power	3/13/2018	9/21/2018	Unit 3
142	Complete Unit 3 Reactor Coolant System cold hydro	2/26/2019	8/15/2019	Unit 3
143	Complete Unit 3 hot functional test	5/26/2019	11/11/2019	Unit 3
144	Complete Unit 3 nuclear fuel load	12/19/2019	3/11/2020	Unit 3
145	Begin Unit 3 full power operation	5/20/2020	7/12/2020	Unit 3
146	Unit 3 Substantial Completion	6/16/2020	8/31/2020	Unit 3



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## AGREEMENT

AMENDMENT TO THE ENGINEERING, PROCUREMENT AND CONSTRUCTION AGREEMENT BETWEEN SOUTH CAROLINA ELECTRIC & GAS COMPANY, FOR ITSELF AND AS AGENT FOR THE SOUTH CAROLINA PUBLIC SERVICE AUTHORITY AND A CONSORTIUM CONSISTING OF WESTINGHOUSE ELECTRIC COMPANY LLC AND STONE & WEBSTER, INC., FOR AP1000® NUCLEAR POWER PLANTS

THIS AMENDMENT ("October 2015 Amendment") to the Engineering, Procurement and Construction Agreement dated May 23, 2008 ("EPC Agreement") for the AP1000 Power Plants at the Virgil C. Summer Nuclear Generating Station ("Project") is entered into this 27th day of October 2015, by and between South Carolina Electric & Gas Company ("SCE&G"), for itself and as agent for the South Carolina Public Service Authority ("SCPSA") (collectively "Owner") and a consortium consisting of Westinghouse Electric Company LLC ("Westinghouse") and CB&I Stone & Webster, Inc. ("Stone & Webster") (collectively "Contractor"). Owner and Contractor may be referred to individually as a "Party" and collectively as the "Parties."

WHEREAS, Westinghouse has represented to Owner that it intends to acquire the stock of Stone & Webster from Chicago Bridge & Iron ("CB&I") (the "Transaction"); that CB&I will have no further involvement in the Project except for certain supply agreements; and that Westinghouse intends to hire Fluor Corporation ("Fluor") or its affiliate(s) as a subcontracted construction manager;

In consideration of the mutual promises herein and other good and valuable consideration, the receipt and sufficiency of which the Parties acknowledge, the Parties, intending to be legally bound, stipulate and agree as follows:

1. The Parties agree that this October 2015 Amendment will be a binding obligation between Owner and Westinghouse upon the approval of the boards of directors of both Owners and the authorization of the board of SCPSA for its management to execute the necessary documentation and the execution of those documents, which shall become effective upon the consummation of the Transaction ("Effective Time"), and in the event the Transaction is not consummated by March 31, 2016, this October 2015 Amendment shall be null and void in all respects. Westinghouse shall cause its wholly owned subsidiary, Stone & Webster, to execute this October 2015 Amendment.

2. Contractor hereby grants Owner until November 1, 2016 ("Option Deadline"), the irrevocable option to exercise an agreement, subject to regulatory approvals, to amend the EPC Agreement by revising the Contract Price and other specific aspects of the EPC Agreement, as stated in the amendment that is attached as Exhibit D ("Option Amendment"). Contemporaneously with the execution of this October 2015 Amendment, Contractor will execute the Option Amendment. Thereafter, Owner may, in its sole discretion, implement the Option Amendment by executing it at any time on or before the Option Deadline. The Option Amendment will not take effect unless and until Owner executes the Option Amendment, before

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the Option Deadline, and all conditions precedent to effectiveness stated in the Option Amendment are satisfied or waived by Owner.

3. Owner agrees to pay Contractor the total sum of \$300,000,000 (current year U.S. Dollars) and increase the Fixed Price Contract Price by said amount. Further, Contractor agrees to provide Owner with a credit to the Target Price in the amount of \$50,000,000 (current year U.S. Dollars). The net \$250,000,000 will be paid in twelve equal monthly installments beginning five days after the Effective Time. In exchange, Owner and Contractor agree to a full resolution by settlement and release of any and all disputes outstanding under the EPC Agreement or otherwise concerning the Project as of the Effective Time, including the following:

- a. Contractor claims for additional payments for any of the items on Exhibit A, as well as claims for additional payment for cyber security and the site layout phase 2 Change Order (Change Order 26).
- b. Contractor claims for amounts referenced in letters no. VSP\_VSG\_003111, VSP\_VSG\_003115, VSP\_VSG\_3145, VSP\_VSG\_3502 and VSP\_VSG\_3522, which totaled approximately \$83,518,046 as of August 21, 2015, as set forth on Exhibit B.
- c. Contractor claims for amounts in other cases in which the entitlement is in dispute, which totaled approximately \$29,729,785 as of August 31, 2015, as set forth on Exhibit B.
- d. Contractor claims for amounts in dispute due to billings that have been held because a Change Order has not been executed, which totaled approximately \$5,565,845 as of August 31, 2015, as set forth on Exhibit B.
- e. Contractor claims for all amounts in dispute in cases in which only the timing is disputed, which totaled approximately \$110,190,504 as of August 31, 2015, as set forth on Exhibit B.
- f. Contractor claims for the balance of 10% withheld by Owner in connection with certain invoices for which the Owner has only paid 90% because the Owner disputed the invoice
- g. Owner claims for refunds in connection with invoiced amounts for which Owner has paid 90% of the invoiced amount and for which Owner had previously intended to seek a refund.
- h. Owner claims arising out of the employee fuel expense audit and procurement irregularities.

Subparagraphs a through h do not provide an exhaustive list of all claims, disputes, and amounts that are satisfied by this October 2015 Amendment, it being the Parties' intent that all disputes outstanding under the EPC Agreement or concerning the Project as of the Effective Time are settled and resolved. By way of further clarifications, under this October 2015 Amendment, the Parties waive and settle any and all claims currently pending or threatened by either Party against the other Party and of any and all claims currently known or reasonably foreseeable by either Party against the other Party. Whether or not the Option Amendment becomes effective, all pending Change Orders, and formal and informal notices of potential Change Orders, including but not limited to those arising from Uncontrollable Circumstances and Changes in Law, are

hereby settled and resolved. Each Party represents and warrants to the other Party that it is not aware of the basis for any other claim against the other, including but not limited to those arising from Uncontrollable Circumstances and Changes in Law, and that it is not aware of any facts or circumstances that could be expected to give rise to a claim, the sole exceptions being those claims addressed in paragraph 4. For the avoidance of doubt, in the event that the Option Amendment becomes effective, the \$300,000,000 payment and the \$50,000,000 credit to the Target Price set forth in this paragraph 3 will be part of (and not in addition to) the total Fixed Price amount of \$6.082 billion set forth in the Option Amendment.

The Parties shall execute a mutual release effectuating the provisions of this paragraph 3.

4. Notwithstanding the foregoing, the Parties have identified on Exhibit C to this Amendment all work items that they contend are required or contemplated for the Project but that are not included within the release contained in paragraph 3. Said work items are not resolved, settled or released under this October 2015 Amendment. The Parties shall cooperate in good faith to resolve all such work items expeditiously so as to not impact the Project. In the event a work item cannot be resolved, it shall be submitted to the Dispute Resolution Board as referenced in paragraphs 13 and 16. Similarly, with respect to the cyber security item listed in Exhibit A, the Parties shall cooperate in good faith to resolve all issues relating to scope expeditiously. Contractor acknowledges its obligation to commence and continue work in compliance with current NRC regulations on cyber security, pending issuance of a Change Order, so as not to impact the Project schedule, and its obligation to complete the Cyber Security work within the GSCDs stated in paragraph 6. In the event a scope item cannot be resolved, it shall be submitted to the Dispute Resolution Board as referenced in paragraphs 13 and 16. Except for the items on Exhibit C and the Time and Material Work set forth in paragraph 2 of the Option Agreement, the cyber security item listed in Exhibit A and without waiving its rights concerning unknown Changes under Article 9 of the EPC Agreement, Contractor is not aware of any additions to the Scope of Work that will be required for the Project to reach Substantial Completion.

5. The Contractor acknowledges and agrees that its Scope of Work includes providing Owner with a Facility that meets the standards of DCD Rev. 19.

6. The Guaranteed Substantial Completion Dates ("GSCDs") are revised, as follows: August 31, 2019 for Unit 2 and August 31, 2020 for Unit 3. The Standard Equipment Warranty Period(s) and the Services Warranty Period(s) shall commence upon Substantial Completion of each Unit at no additional cost to Owner. To the extent a Change under Article 9 of the EPC Agreement adversely affects Contractor's ability to achieve Substantial Completion as provided in this paragraph 6, Contractor shall be entitled to equitable adjustment of the EPC Agreement as appropriate.

7. Section 13.1 of the EPC Agreement is revised to state that Delay Liquidated Damages for each Unit will commence on the applicable GSCDs stated in paragraph 7, and will be computed as follows:

- a. For the first thirty (30) days following the GSCD: \$200,000/day; and



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- b. For the next thirty-one (31) to ninety (90) days: \$300,000/day; and
- c. For the next ninety-one (91) to one hundred fifty (150) days: \$ 400,000/day; and
- d. For the next one hundred fifty-one (151) to seven hundred thirty (730) days: \$500,000/day; and
- e. Seven hundred thirty-one (731) days or beyond: \$0/day.

8. The Parties agree to share the loss if either or both Units do not qualify for production tax credits under Federal law. If a Unit is not "placed in service," as that term is used in Section 45J of the Internal Revenue Code, before January 1, 2021, Contractor agrees to reimburse Owner by February 1, 2021, the sum of \$250 million per Unit, expressed as a one-time lump sum payment. For purposes of this paragraph, the January 1, 2021 date can only be extended for the following reasons (i) material actions or omissions of Owner that cause a Unit not to qualify for tax credits; or (ii) extension of the tax credit date by the U.S. government. If Contractor becomes aware of any actions or omissions of Owner that Contractor believes may cause a Unit not to qualify for tax credits, Contractor shall provide Owner with reasonable notice of such actions or omissions.

9. The maximum amount paid by Contractor to Owner under paragraphs 7 and 8 above will be limited to \$338 million per Unit, if the Option Amendment becomes effective. In the event the Option Amendment does not become effective, the maximum amount paid by Contractor to Owner under paragraphs 7 and 8 above will be limited to \$463 million per Unit.

10. Owner will pay Contractor an early completion bonus consisting of \$150,000,000 per Unit for each Unit that is "placed in service," as that term is used in Section 45J of the Internal Revenue Code, in advance of January 1, 2021, if the Option Amendment becomes effective. In the event the Option Amendment does not become effective, Owner will pay Contractor an early completion bonus consisting of \$275,000,000 per Unit for each Unit that is "placed in service," as that term is used in Section 45J of the Internal Revenue Code, in advance of January 1, 2021. For purposes of this paragraph, the January 1, 2021 date can only be extended for the following reasons (i) material actions or omissions of Owner that cause a Unit not to qualify for tax credits; or (ii) extension of the tax credit date by the U.S. government. If Contractor become aware of any actions or omissions of Owner that Contractor believes may cause a Unit not to qualify for tax credits, Contractor shall provide Owner with reasonable notice of such actions or omissions.

11. The Parties agree that no new Inspection, Tests, Analyses and Acceptance Criteria ("ITAACs") have been issued or proposed as of the Effective Time that would affect the GCSDs or entitle the Contractor to a Change Order.

12. The Parties shall cooperate in good faith to develop a new milestone payment schedule ("Construction Milestone Payment Schedule") to include all unpaid or overpaid amounts. While such good faith efforts are ongoing, Owner agrees to make payments to Contractor in the amount of \$100,000,000 per month for the first five (5) months following the Effective Time. Said payments shall be in lieu of all payments for Fixed Price, Firm Price, Target Price and Time and Material Work. Once developed, Contractor agrees that Owner is to make such payments to Contractor according to the Construction Milestone Payment Schedule, instead of the existing Payment Schedules. If the Parties fail to agree to a Construction Milestone Payment Schedule by the date that is six months from the Effective Time, the matter shall be referred to the Dispute

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Resolution Board ("DRB") process for resolution. Unless otherwise agreed by the Parties, the DRB shall issue its report on the Construction Milestone Payment Schedule within sixty (60) days. For the 60 day period during which the DRB is reviewing the Construction Milestone Payment Schedule, Owner shall pay the sum of \$100,000,000 per month in lieu of all other payments, and such payments will be treated in the same manner as the payments referenced in paragraph 3.

Contractor will continue to invoice Owner according to previous procedures (i.e. Contractor will provide parallel invoices for Target, T&M, and Firm and Fixed Price categories) to enable calculation of the amount by which the payments described in paragraphs 3 and 12 exceed what would otherwise be due Contractor. After these advance payments cease, the excess or deficit portion of such advance payments shall be adjusted against future invoices submitted by Contractor to Owner under the EPC Agreement, at the Owner's sole discretion. Actual payments will be trued up to parallel invoices in months 6, 12 or when the Option Amendment becomes effective.

In the event that the Option Amendment is exercised and takes effect, the actual payments made under paragraphs 3 and 12 will be deducted from the amount referenced in section 1 of the Option Amendment. If the Option Amendment does not take effect, billing procedures for Target and T&M Work scopes will revert back to the EPC Agreement terms, as amended, incorporating the adjusted terms in paragraph 3 above, and Firm Price and Fixed Price scopes will continue to be billed based on the Construction Milestone Payment Schedule. For the avoidance of doubt, the cash flows of the Construction Milestone Payment Schedule will be reduced to reflect the lower amounts remaining in the Fixed Price and Firm Price categories as defined in Exhibit H of the EPC Agreement.

13. Within ten (10) days of establishing the Construction Milestone Payment Schedule, Owner shall advance a deposit of seventy-five million dollars (\$75,000,000) with the Contractor.

- a. After the deposit is made, Owners will not be obligated to pay to Contractor the disputed portion of any invoiced amounts submitted by Contractor to Owners.
- b. The Parties shall revise the dispute resolution procedures in Article 27 of the EPC Agreement to eliminate the requirement or ability to institute litigation during the course of the Project absent a suspension or termination of the EPC Agreement.
- c. The Parties shall establish a DRB process for the interim, non-final resolution of disputes, as described more fully in paragraph 16 below and Exhibit E.
- d. Owner agrees to make payment to Contractor within thirty (30) days of any award entered in favor of Contractor by the DRB.
- e. At Project completion, the deposit amount of \$75,000,000 shall be credited against Owner's final milestone payment owed Contractor.

14. The definition of "Change in Law" in the EPC Agreement is modified so that a Change in Law occurs only in case of (a) the formal written adoption by a Government Authority of a new statute, regulation, requirement or code that did not exist as of the date of the October 2015 Amendment; or (b) where the NRC is the involved Government Authority, the NRC's official issuance or promulgation, after the date of the October 2015 Amendment, of a final and official

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version of Regulatory Guides (NUREGs), Branch Technical Positions, Standard Review Plans, Interim Staff Guidance, Bulletins, Orders, or written directives, in which NRC acknowledges a new regulatory requirement or a change to an existing requirement that did not apply before the date of the October 2015 Amendment. Where Contractor cannot demonstrate a Change in Law under this paragraph, Contractor shall also be precluded from claiming that the purported Change in Law is an Uncontrollable Circumstance.

15. The Parties agree to participate in meetings with the Nuclear Regulatory Commission ("NRC") and develop strategies in an effort to alleviate issues that have arisen due to the NRC's inspections at the Project, while still affording the NRC the ability to conduct appropriate inspections. Owner cannot agree in advance to adopt the Contractor's position on every issue, but Owner will work with Contractor in good faith. In the event the Option becomes effective, Owner shall have no obligation to pay Contractor for regulatory support associated with License Amendment Requests or ITAACs, except those that arise due to a Change. In the event the Option Amendment does not become effective, such matters shall be submitted to the DRB process established pursuant to this October 2015 Amendment. For the period of time between the Effective Time and the Option Deadline, the Parties agree to suspend the DRB process for matters relating to regulatory support associated with License Amendment Requests and ITAACs. In the event the Option Amendment does not become effective, the suspended DRB matters will be administered. If the Option becomes effective, those matters suspended by the preceding sentence shall be deemed to be included in the Fixed Price.

16. Consistent with paragraph 13 above, Article 27 of the EPC Agreement is revised to eliminate the requirement or ability to bring suit during the course of the Project. The Parties agree to empanel a DRB for the interim, non-final resolution of disputes in accordance with the Dispute Resolution Agreement that is attached as Exhibit E.

17. Owner hereby waives and cancels the Chicago Bridge & Iron Parent Company Guaranty. Owner agrees that Contractor shall be relieved of any obligation to furnish a parent company guaranty on behalf of S&W under the EPC Agreement. Owner and CB&I shall execute a mutual release of all claims relating to the EPC Agreement, the Project, the S&W Parent Guarantee and the CB&I Guarantee.

18. The Parties agree to hold a face-to-face meeting among Owner, Westinghouse, the President and Chief Executive Officer of Power Systems Company, and Mr. Shiga Shigenori, the Representative Executive Officer and Corporate Senior Executive Vice President of Toshiba Corporation (or his successor) to allow Owner to describe its concerns with the Project to date and to discuss Toshiba's commitment to completing the Project and to the terms of this Agreement. In addition, at Owner's option, Toshiba, Owner, Contractor, and Fluor will hold quarterly meetings to discuss Project progress.

19. Contractor's profit on any future Change Orders under the EPC Agreement shall be capped at 7 ¾%.

20. The Parties agree that Article 13.3 is deleted from the EPC Agreement.

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21. The provisions of Section 8.6(d) of the EPC Agreement are revised to provide that SCE&G or Santee Cooper shall not be required to furnish Contractor with an irrevocable, standby letter of credit, provided the Credit Rating of SCE&G or Santee Cooper, as applicable, remains at or above investment grade (Standard and Poor's BBB-; Moody's Baa3). If the Credit Rating of SCE&G or Santee Cooper falls below investment grade, Contractor may request the letter of credit, and SCE&G or Santee Cooper must furnish the letter of credit at no expense to Contractor.

22. The Parties agree to cooperate with respect to the involvement of Owner's Project consultant and/or Owner's Engineer with the work scheduled to be done by Owner's consultant.

- a. Contractor shall carefully consider all matters raised by the consultant, however the consultant shall have no authority to direct the Work of Contractor.
- b. Contractor agrees to provide the consultant with access to relevant documents reasonably requested by the consultant, provided such documents are necessary for the consultant to complete its work for Owners.
- c. For relevant documents provided under subparagraph (b) above, Contractor may provide confidential and proprietary documents in redacted form, including redaction of any pricing information. Contractor will provide unredacted documents to the consultant, provided Contractor determines in its reasonable discretion that it is given suitable protections from Owners and/or the consultant against misuse or further disclosure of such documents.

23. Contractor acknowledges Owner's right to discuss any and all operational and project execution issues with the Vogtle owners. Owner is not permitted to disclose to the Vogtle owners information relating to any disputes, commercial issues or the terms and conditions of this agreement and any related documents or agreements.

24. All capitalized terms in this October 2015 Amendment, except for those defined in this October 2015 Amendment, shall have the meanings given to them in the EPC Agreement.

25. All provisions of the EPC Agreement not modified, expressly or by necessary implication, remain in full force and effect. All Exhibit references are to this October 2015 Amendment.

26. While the Parties acknowledge the existence of various confidentiality agreements between themselves, they also recognize that certain disclosures must be made to satisfy various securities laws and for regulatory purposes. Each Party is free to make such disclosures as it deems prudent, but the disclosing Party must provide a copy of any intended written disclosure to the other Parties before such disclosure is made.

27. Upon execution of this October 2015 Amendment, Contractor will provide written details of its relationship and structure with Fluor, including a scope of work description, sufficient to allow the Owner to understand the roles and responsibilities of Fluor on the Project. In the event of a material change in the relationship, structure, or scope, Contractor will provide details of the

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change. In the event the Option Amendment does not become effective, Contractor shall submit construction related billings consistent with the existing provisions of the EPC Agreement.

28. To the extent not prohibited by its existing contracts, Contractor agrees to afford Owner and Owner's consultant access to its facilities and those of its suppliers and subcontractors at any tier, for the purpose of completing Owner's consultant's assessment and monitoring of the Project and the Project Schedule.

29. In the form of Exhibit F, Contractors will provide written consent of Toshiba Corporation to this October 2015 Agreement, affirming that the corporate guaranty of Toshiba remains in place, notwithstanding this October 2015 Agreement. This signed exhibit must be provided to Owner's prior to the Effective Time.


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**IN WITNESS WHEREOF**, the Parties have duly executed this October 2015 Amendment to the EPC Agreement as of the date first above written, with Toshiba Corporation, as the parent corporation of Westinghouse, indicating its express consent hereto.

SOUTH CAROLINA ELECTRIC & GAS  
COMPANY, for itself and as agent for South  
Carolina Public Service Authority

By:   
Name: \_\_\_\_\_  
Title: Chairman - CEO

WESTINGHOUSE ELECTRIC COMPANY LLC

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

STONE & WEBSTER, INC.

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

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**SOUTH CAROLINA ELECTRIC & GAS  
COMPANY**, for itself and as agent for South  
Carolina Public Service Authority

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**WESTINGHOUSE ELECTRIC COMPANY LLC**  
By: \_\_\_\_\_  
Name: *David H. Cook*  
Title: President & Chief Executive Officer

**STONE & WEBSTER, INC.**  
By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

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SOUTH CAROLINA ELECTRIC & GAS  
COMPANY, for itself and as agent for South  
Carolina Public Service Authority

By:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

WESTINGHOUSE ELECTRIC COMPANY LLC

By:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

CB&I STONE & WEBSTER, INC.

By: 

Name: David C. Durham

Title: President

## **Exhibit A**

Exhibit A			
Count	Issue	Issue Description	Deliverable
29	CAS and PRS Support	<p>Primarily due to delayed design completion, the simulators delivered by the Consortium (intended to be PRSs) to the Owner do not have the functionality to support being certified by the Nuclear Regulatory Commission. As a result, the Owner has had to pursue the CAS alternative due primarily to repeated delays in ISV testing by the Consortium, which have most recently impacted the completion of ISV testing in time to support the Owner NRC exams that had been scheduled to occur in May 2015. This issue puts at risk the Owner's ability to train and certify operators in time to support Units 2 and 3 fuel loads.</p>	<p>(1) As no additional cost to Owner, Westinghouse to provide a Commission Approved Simulator to include: All fixes as identified to support a successful CAS implementation (fixes delivered, support to install, and fixes to fixes as necessary); End state deliverable is a simulator ready and capable of conducting license operator exams</p> <p>(2) If CAS is unsuccessful, at no additional cost to Owner, WEC to provide: All ISV/HEDs (Priority 1 and 2) fixed and included in a baseline 7+ simulator capable of closing the ISV ITAAC by June 2017; The H/E/RSV ITAAC should be closed such that we can answer the question in the NRC Inspection Procedure IP41502 for PRS "Is the ISV ITAAC closed?" Yes; The simulator must be delivered to site by June 2017; Success will be measured by successful completion of Inspection Procedure 41502 by NRC Region II resulting in us having a PRS</p> <p>(3) If CAS is successful, at no additional cost to Owner, Westinghouse to provide: All ISV/HEDs (Priority 1 and 2) fixed and included in a baseline 8 simulator capable of closing the ISV ITAAC by Mar 2018; The H/E/RSV ITAAC should be closed such that we can answer the question in the NRC Inspection Procedure IP41502 for PRS "Is the ISV ITAAC closed?" Yes; The simulator must be delivered to site by March 2018; Success will be measured by successful completion of Inspection Procedure 41502 by NRC Region II resulting in us having a PRS.</p> <p>(4) Commercially, CAS, CAS fixes and B17+ ITAAC closure (if necessary) is all part of completion of ISV and delivery of a B17 simulator and as such is already a paid for deliverable. As part of that, the B18 Fuel Load baseline should be considered the deliverable for CO #19.</p>
30	Design Basis Assessments (5 included in the scope)	<p>Licensing and Regulatory compliance reviews of high risk portions of the AP1000 design is to uncover License and Regulatory noncompliance issues prior to Construction to preclude delays to Project completion similar to those encountered during construction of the Nuclear Island basemat in 2012. The results of these reviews have uncovered License noncompliance issues including Tier 1 and Tier 2+ issues and successfully mitigated them through a Licensing or design change without adverse impact to the Project schedules. It is likely that these items would not have been uncovered prior to Construction without the undertaking of these reviews. It is also likely that, if these items were uncovered after Construction had commenced, work delays of multiple months would have been experienced while the issues were resolved. Westinghouse contends that the AP1000 design is consistent with all requirements of the Licensing Basis and that assessments are unnecessary.</p> <p>Westinghouse has charged the Owners for support necessary to perform the assessments citing that no assessments were necessary. SCE&amp;G believes that the value of the assessments to the Projects and to Westinghouse have been demonstrated. In addition to the benefits of reduced schedule and regulatory risk mentioned above, Westinghouse receives the benefit of independent assessment of key areas of the AP1000s unique design.</p>	SCE&G requests that Westinghouse move forward with assessments (five additional assessments are desired) and cover their internal costs such that each Party participating in the review is responsible for its own cost. In this manner, each Party shares in the costs and benefits through reduced Project schedule risk and reduced regulatory risk.
31	WEC home office and site licensing efforts	For Contractor initiated Design Changes, processing Contractor's desired changes to the design and licensing basis is resource intensive. The Contractor has initiated and processed thousands of DCPs and hundreds of LCPs. Changes are made at the request of the Contractor for convenience or in order to address challenges within the Contractor's original design that was purchased by the Owner under the EPC Agreement. The Owner has incurred considerable cost to process Contractor's desired changes to the VCS 2/3 licensing basis. Such changes are made for the Contractor's convenience. The EPC did not account for the changes to the licensing basis requested by the Contractor. The EPC was based on Owner purchase of a design from the Contractor and the Owner has incurred costs to allocate resources and obtain additional contract assistance in order to support Contractor requested changes. In addition, Contractor has requested reimbursement of expenses for implementing changes to the extent that work relates to site-specific Tier 1, Tier 2+, CDL, or Tech Spec requirements. An example is the EP ITAAC Table 7-S-1 and 7-S-201 in CDL Appendix C. These tables were cited by the NRC as an EP ITAAC to show required plant equipment to support EP. This equipment was also described in the DCD and if changed by the Contractor requires a site specific supporting change to the CDL.	Subject to Paragraph 15 of the October 2105 Amendment, Westinghouse should be responsible for its costs incurred to make changes to the Owner's Current Licensing Basis (CLB), attributable to its DCPs and LCPs. This includes efforts to resolve Owner comments prior to incorporation of change into the VCS 2/3 CLB, whether made on a draft or final revision of the proposed change package. It is reasonable to expect that some changes may require multiple comment review cycles due complexity and number of parties involved. Westinghouse should also be responsible for its costs incurred for implementing changes to the extent that work relates to site-specific Tier 1, Tier 2+, CDL or Tech Spec requirements. The Owner will be responsible for Owner-directed changes.
32	WEC's position on CB&I Service claim against WEC for CV costs (delay and other)	CB&I Services (WEC's subcontractor) Containment Vessel safety-related Work was delayed from January 19, 2011 through July 31, 2011. WEC invoiced the Owner \$1,405,811.35 (Target Price). CB&I Services' work was delayed due to CB&I Services' ineffective QA program; Westinghouse and its subcontractors are required to have a QA program that meets the requirements of the EPC Agreement. The Owner should not be liable for any charges associated with a delay period during which CB&I Services had to take actions necessary to meet its contractual QA program obligations.	WEC should retract this invoice as no longer owed by the Owner. Whatever settlement WEC reached with CB&I Services associated with this delay should remain between WEC and its subcontractor. No further invoices will be issued to Owner related to the costs for schedule delay impacts on the CV unless related to a Change under Article 9 of the EPC Agreement.
33	Secondary Lab and Sampling Room in Turbine Building	Per Exhibit A of the EPC Agreement, the Turbine Building is to be provided as a complete structure and finishes inclusive of all equipment, components and commodities. Consortium's position is that they are entitled to a Change Order for the completion of Secondary Chemistry Laboratory including utilities (e.g. gas lines, water lines, faucets, drain lines, electrical outlets) and fixtures (e.g. sampling panels, fume hood, sinks, high purity water treatment unit) to be located in the laboratory that interface with multiple plant systems including the Main AC power System, Waste Water System, Potable Water System, Demineralized Water System, and the Turbine Building Ventilation System.	The Consortium should supply the secondary chemistry lab furnished to the scope of supply outlined in the attachment titled "Secondary Chemistry Lab Scope of Supply" attached to SCE&G letter NND-15-0085 dated February 4, 2015.



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39	Shield Building Door, Annex, Auxiliary Building, Aircraft Impact Assessment.	The Consortium sent to Owner Notice of Change letters (VSP_VSG_003096 and VSP_VSG_003450) claiming that a new NRC Rule entitled "Consideration of Aircraft Impact for New Nuclear Power Reactors" (the AIA Rule) impacts other structures in the Nuclear Island. Specifically, the Consortium claims that it is required to make changes to the Annex and Auxiliary Buildings' wall design, as well as Annex and Auxiliary and Shield Building doors to comply with the NRC Rule. The Consortium further claims that this scope of work is outside that of the EPC Agreement and warrants a change order. The Owner has taken exception to the Consortium claim in NND-15-0007 and NND-15-0323 based on the availability and knowledge of the draft AIA Rule prior to execution of the EPC Agreement and the comprehensive Agreement between the Consortium and the Owner executed on July 11, 2012 and resolving all issues associated with the AIA Rule impact.	Consortium to implement the necessary design and construction changes to the Shield Building Door and Annex and Auxiliary Buildings impacted by the AIA Rule in accordance with the EPC Agreement and July 11, 2012 Agreement.
40	Loss of Large Areas of the Plant due to Explosions or Fire Testing	On March 27, 2009, the NRC amended 10 CFR Part 50 and 10 CFR Part 52 with new requirements to address loss of large areas (LOLAs) of the plant due to explosions or fires from a Beyond Design Basis Event. The NRC issued Interim Staff Guidance DCD/CDL-ISG-016 to assist new applicants or holders of COLs to address the LOLA requirements. These requirements were not included in DCD Revision 16, which is the design basis for the Agreement (Reference 1). In Reference 2, Owner notified the NRC that changes would be made to a future revision of the V.C. Summer Units 2 & 3 COLA in accordance with 10 CFR 52.80(d) and 10 CFR 50.54(h)(2) to address LOLA. Owner provided the NRC with a Mitigative Strategies Description (MSD), which described the preoperational testing required to provide a reasonable confirmation of adequate spent fuel pool spray coverage. These requirements were incorporated into Owner's COL Section 2.D.(12)(e).8 as a license condition. The Consortium has offered to perform this work for SCE&G as a change order.	Consortium to perform the testing and other work required to meet Owner's LOLA obligations under the COL Section 2.D.(12)(e).8 as a license condition at no additional cost to Owner.
41	Pre-Service Testing Program Development, Pre-Service Test Conduct, ITP	The Owner and Consortium have a difference of opinion on the Initial Test Program scope as related to the following items referenced in VSP_VSG_003669: 1. Pre-service testing, including baseline in-service testing 2. Initial core load and post core load vessel assembly 3. Any spent fuel pool spray flow and makeup testing required to support the Loss of Large Area (LOLA) Mitigation Strategy Document (reference item 40 on Commercial List) 4. Cooling Towers testing 5. Preoperational testing for: a. Storm Drains; b. Site-specific Seismic Monitoring System; c. Offsite AC Power Systems; d. Raw Water System; e. Sanitary Drain System; f. Fire Brigade Support Equipment; g. Portable Personnel Monitors and Radiation Survey Instruments; h. Physical Security Plan equipment implied in UFSAR Section 14.4.5; and, i. External/Offsite Communications The Consortiums position is that these items are not included in the EPC Agreement scope. The Owner's position is that the items above are in the EPC Agreement ITP scope. Additional ITP expectations include the following: 1. All FPOT and F3POT testing and associated activities to include test specification and procedure development, material/equipment procurement, test planning, test scheduling, test performance, data analysis and generation of final test report. Reference item 36 on Commercial List. 2. All testing associated with "site specific" systems listed in EPC Agreement Exhibit A, Table 1. Activities to include test specification and procedure development, material and equipment procurement, test planning, test scheduling, test performance, data analysis and generation of test report. 3. ASME Pre-service Test Plan development and implementation as noted in the first section above based on the current revision of the ASME QAI document. 4. Steam Generator Moisture Carryover Test procedure development, material and equipment procurement, test planning, test scheduling, test performance, data analysis and generation of test report. Reference item 45 on Commercial List. 5. Large Area Testing. Reference item 40 on Commercial List.	Consortium to include all of these items in the ITP at no additional cost to Owner.
42	Procedure revisions from Technical Specification Upgrade (Owner, WEC 50/50)	This issue deals with LAR 13-037 (Technical Specification Upgrade) and the Owner's position that the technical specifications as written were not viable and would not allow the Owner to successfully operate the plants (reference NND-14-0479). Technical specification examples were given in NND-14-0479 relating to the Steam Generator Isolation Valves flow path, Reactor Coolant Pump minimum flow parameters and the Radioactive Effluent Control Program.	Contractor to provide a proposal to APOG for the requested scope per letter dated October 7, 2015 from APOG with subject: APOG-2015-007 Request for Quote - Technical Specifications Upgrade Impacts. Scope will be performed in accordance with and under the terms of an APOG purchase order. In the event the work is not performed through APOG, Westinghouse to provide technical specifications that are technically accurate and easily understandable and Contractor to complete items #1-5 in VSP_VSG_002989.
43	Providing As-Built Drawings	EPC Table 2-1 makes reference to As-Built and As-Designed separately from each other. Consortium members have verbally communicated that they interpret As-Built to be the As-Designed document combined with the associated change documentation. This is not consistent with SCE&G's understanding of the term As-Built. WEC procedure APP-GW-GAP-615, Appendix FS states - To pass release for the core load and turnover to the Owner, the design shall: The design input document shall have no open items or unincorporated changes; Design output documents shall be complete, numeric, and consistently relate to the design input document. A numeric revision, verified compliance document is required and shall demonstrate that the design output documents have met all design input requirements. Design output shall have considered and reconciled the impact from as built and as-tested conditions that may impact core load. NRC Inspection Manual, Inspection Procedure 65001, "Inspections of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) Related Work", Attachment 65001.A requires the following: 02.04 Review As-Built Deviations / Non-Conformances: a. Review a sample of documents that were used to identify differences between the as-designed and as-built SSCs to determine if: i. The difference, if not corrected to comply with the as-designed conditions, was properly documented and incorporated in the final as-built drawings.	To preclude any discussion or confusion regarding what may or may not impact core load, at no additional cost to Owner, WEC to turn over to SCE&G all documents as described in EPC Table 2-1, in an as-built state, with all changes and dimensional discrepancies incorporated into the document. Owner understands the engineering backlog on change paper is growing and immediate actions are required to be able to deliver "clean paper". Owner understands that additional changes may occur after Turnover and is prepared to address processes to handle these changes.
44	Operating Procedure Configuration Control (Owner to Incorporate All post-Baseline 7 Design Changes)	Westinghouse continues to make design changes to the Facility that effect standard operating procedures delivered to the Owner. Identification of the affected procedures is essential to ensure that the operating plant procedures are consistent with the plant design as required.	At no additional cost to Owner, Westinghouse to identify the impact of all design changes on operating procedures and provide this information to Owner.
45	Steam Generator Moisture Carryover Test	Refer to item 43 on Commercial List.	Refer to item 43 on Commercial List.
47	Communication System and BS Power Allocation	For the Communication System issue, the initial Consortium design did not take into account the site layout of the plants sold to SCE&G. Designs were for a single unit and ended at the security fencing. The Consortium's initial position was that their responsibility for wireless and wired phones, paging system, radios and networking systems ends at the "fence line." SCE&G contends that the Consortium is responsible to extend these systems to the site specific areas like RMS intake structure, CWS cooling towers, and OWS facility. For the BIS Power Allocation issue, power allocated for Communications is not sufficient for SCE&G needs (e.g. powering phones, cameras, etc.). Per design documents 48.6kW total power was allocated for both BIS and EFS networks. EFS would be allocated 35kW with the remaining 13.6kW allocated for BIS. SCE&G determined that the BIS power use was 38.4kW versus the 13.6kW allotted in the design.	For the Communication System issue, Consortium letter VSG_VSP_002475 dated October 9, 2013 established an acceptable DOR addressing the majority of the issues and site layout change order 26 resolved the remaining issues. For the BIS Power Allocation issue, Consortium to work with Owner to achieve adequate BIS power to support SCE&G communication needs at no additional cost to Owner.

49	Site Security System Backup Power	AP1000 Design Change Proposal APP-GW-GEE-2720 "Annex Building Security Features Update" identifies the back-up duration for the security system to be less than that identified in APP-GW-GLN-056 "AP1000 Safeguards Threat Assessment" and section 3.6.9 of NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design." The Owner does not accept this reduction in back-up power reduction as referenced in NND-14-0689.	Westinghouse to provide the required back-up power duration. The Owner is willing to consider the reduced back-up power duration contingent upon WEC's integration of the Plant Security Systems (SSS) for Units 2 and 3 (Reference NND-14-0689).
50	OWS Security Plan	The Offsite Water System (OWS) Treatment Facility includes security and fencing plans that have been discussed with the Consortium and incorporated in the pricing for the latest draft Change Order 17 dated May 10, 2015. Correspondence relating to the OWS Security Plan includes VSP_VSQ_001469, NND-11-0444, VSP_VSQ_001605 and NND-12-0034. Incremental OWS security plan costs required to meet Owner corporate standards became a commercial issue, specifically the security and fencing requirements and the fire alarm system and fire detection system. Other OWS commercial issues included in the draft CO 17 are the numbering and tagging of equipment and coatings and pipe color requirements. It is noted that the primary OWS change reflected in the draft CO 17 is the addition of the reverse osmosis system to remove bromides from the water. The Owner and Consortium negotiated a "no EPC Agreement price increase" change order for CO 17 which included the OWS security and fencing plans as well as the other items referenced herein. The draft CO 17 also includes other commercial items agreed upon by the Owner and Consortium.	That the Consortium complete the installation of the OWS security, fencing and other items above to the satisfaction of the Owner. CO 17 is addressed in Commercial List item #70.
53	PEB Design Change	The Consortium and SCE&G could not initially come to agreement on the design requirements of the Plant Entry Building.	This issue was resolved with the issue of change order 26.
57	Fire Alarm monitoring	Due to the delay in the project schedule, the Owner is concerned about the increasing value of inventory in the onsite warehouses 20A, 20S and 57 in relation to the insurability of the warehouses and their content under the Owner's Builder's Risk Policy. Owner has elected to implement enhancements to the fire alarm monitoring for these warehouses, which includes monitoring of sprinkler system water flow switches in the three warehouses and interconnecting the new system to the existing yard fire alarm system. On October 7, 2015, the Consortium provided to the Owner a draft CO for Owner's review and comment.	The Consortium to install new local fire alarm control panels in Warehouses 20A and 57; the flow switches will be monitored locally at each of these 2 warehouses. A new main fire alarm panel will be installed in Warehouse 20S. This new main fire alarm panel will monitor the Warehouses 20A and 57. The new main fire alarm panel will be network connected to the existing Siemens fire alarm system using single mode fiber optic connections. Spare fibers which run between the buildings shall be assigned for this purpose. All alarms from the new warehouse fire detection system will be monitored by the existing system's main fire alarm panel located in the main plant entry guard shack. Physical connection with the existing system's network shall be made at the YFS fire pump house. The new fire detection system for the three warehouses will be designed as a Class B system; Class A monitoring is not required to satisfy the requirements of the authority having jurisdiction codes for these warehouses.
60	Laurens Piping Quality Issues	CB&I Laurens issued a self-imposed Stop Ship on March 12 following a CB&I Power Audit (V2015-035), which included two Level 1 findings and three Level 2 findings. Most of the issues were repeat findings from previous Audits/Surveillances performed by CB&I Power.  CB&I Laurens issued a Stop Work Order (SWO) on all Safety Related (SR) ASME Section III piping on March 17. The issuance of this SWO was during the March NRC inspection which found many similar issues documented in the CB&I Audit (V2015-035). The major issues being addressed by the SWO are CGD and Qualification of Vendors, Internal and External Audit Programs, Document Control, and Corrective Action Program.  During CB&I Power Surveillance 2015-172, which occurred in August 2015, the surveillance team discovered that issues with CGD and Qualification of Vendors had not been fully addressed by CB&I Laurens. This was also noted as an indicator that the corrective actions with the CAP had not been fully effective.  July 2015, CB&I Site QC inspection of pipe spools not signed off by Laurens AHI resulted in an approximate reject rate of 65%. These were due to minimum wall violations, dimensional issues, and misfabrications. These results have raised questions on inspection methodologies between Summer, Laurens, Vogtle, and Source Inspection.  An additional CB&I Laurens self-imposed SWO was put in place on 10/09/15 regarding the incorrect VALVES being placed in a pipe spool. The preliminary investigation determined that this does not affect Section III Safety Related pipe spools and has only affected a single spool. However, this investigation is only preliminary and a full Extent of Condition has not been performed. In addition to the Laurens SWO CB&I Power has issued QRL restrictions for shipping of Laurens ASME SR spools unless they are released (after enhanced inspection) by the CB&I site QA Directors. Currently Pipe Spools have only been released in phases 1-3 of a 4 phase SWO. No spools will be released to phase 4 until completion of First Article Survey (FAS) by CB&I Power. Once all Spools are completed through Phase 4, the SWO will be lifted.	1. Completion of Corrective Actions associated with stop work /stop ship and lifting of restrictions. 2. Agreement on inspection methodologies between Vogtle, Summer, Laurens, and Source Inspection. 3. Completion of Enhanced Inspections on post SWO pipe spools performed by YC Summer QC. 4. Sustainable improvements in programmatic systems reported from Audit/Surveillance results performed by CB&I Power.
67	Common Q/Ovation MTS	Owner needs to have an Ovation MTS so Owner can train its technicians and engineers on Ovation equipment in the Ovation Maintenance and Ovation Core Team training areas. The Ovation MTS provides an offline environment with a representative sample of system hardware representing the Distributed Control and Information System (DCIS). In the plant, the Ovation platform is used for the Plant Control System, the Data Display and Processing System, and portions of the Operator Interface of the Operations and Control Centers System (collectively DCIS). Owner provided a revised scope of work to Westinghouse on September 9, 2015 and requested an updated cost proposal. (Note: Common Q MTS CO was in August 2015)	Westinghouse to provide the Ovation MTS, to include the hardware, software, documentation and support, as described in the revised scope of work, which was emailed to Westinghouse on September 9, 2015.
69	Path forward to execute CO16	CO#17 provides clarification information for CO#16. If CO #17 is to be executed, the 2 COs need to be executed together. However, the project schedule upon which CO#16 was based no longer reconciles with the current working schedule.	1. Reach agreement with Consortium on execution of CO #16 and/or CO #17 2. If CO #16 is executed, determine whether schedule language in CO #16 should be modified 3. If schedule language needs to be modified, reach agreement with Consortium on updated language 4. Reach agreement with Consortium on whether Exhibit F schedules should be included in the CO, specific to CO #16. Consortium has proposed not including Exhibit F tables, since the information would be stale at the time of CO execution; instead the impacts of CO #16 to the Exhibit F milestones would be incorporated into an EPC Amendment. 5. Execute alone or simultaneously with CO #17
70	Path forward to execute CO17	CO#17 provides clarification information for CO#16; if CO #17 is to be executed, the 2 COs need to be executed together. However, the project schedule upon which CO#16 was based no longer reconciles with the current working schedule.	1. Reach agreement with Consortium on execution of CO #16 and/or CO #17 2. If CO #17 executed, reach agreement with Consortium on whether Exhibit F schedules should be included in the CO, specific to CO #17 (Tables F.1.6 (f-h)). Consortium has proposed not including Exhibit F tables, since the information would be stale at the time of CO execution; instead the impacts of CO #17 to the Exhibit F milestones would be incorporated into an EPC Amendment. 3. Owner to transmit agreed-to de-escalation process since it is not included in CO as Owner requested. 4. If executed, execute simultaneously with CO #16

77	TEDV DAQ Funding	<p>Purchase agreement between Westinghouse, Southern and SCIGS is to provide the data acquisition system and capability to support thermal expansion and dynamic evaluation of plant components during testing.</p> <p>During Phase 1 of the EPC Agreement scope of work, the Owner said the Contractor to develop the requirements for all inventory facilities on the Site, to include warehouses and equipment and material laydown areas. The Contractor developed the requirements, was given unlimited access to the Site and was in control of the Target Price budget for construction of the appropriate facilities. The Contractor now estimates significantly more warehouse facilities and laydown area space than it originally planned. The Owner contends that this additional warehouse and laydown area space is attributed to either inadequate planning on the part of the Contractor or structural module delay. The Facilities and laydown area in question at this point are the Bytewood warehouse facility, Metro warehouse facility and laydown area 18. The Bytewood warehouse is being utilized and the lease payments invoiced to the Owner have been disputed. The Metro facility renovation is essentially complete and ready to receive equipment and material. The Contractor will begin involving the Owner for the lease and other expenses. The Area 1A laydown area construction has been out for bids by the Contractor who has been having discussions with the Owner on the invoicing process. The Contractor claims entitlement to a change order for these warehouse facilities and laydown area expenses since they are located off-site. The Owner disagrees and is willing to treat these facilities as target scope work under the EPC Agreement with no justification for a change order. Also, the Owner's position is that CO 8 applies which transferred target dollars to fixed/firm dollars for items such as construction equipment and field non-manual living expenses.</p>	Westinghouse to deliver TEDV DAQ in accordance with purchase agreement.
96	Offsite Storage and Lay down - Leases, Equipment, and HMA Per Diem (area 14, Bytewood, Metro)	<p>The warranty requirements are specified in Article 14 of the EPC Agreement. Specifically, a 24 month warranty period for Equipment begins upon the actual Substantial Completion Dates for Units 2 and 3. The presently approved Guaranteed Substantial Completion Dates for Units 2 and 3 are March 15, 2017 and May 15, 2018, respectively. The Owner's position is that the 24 month warranty period and other warranty provisions in the EPC Agreement should be effective upon the actual Substantial Completion dates due to the structural module delay impact on the Project Schedule. Also, there are specific warranty claims that the Consortium is responsible for resolving. For example, the Units 2 and 3 bytewood has experienced component failures, specifically related to capacitors, as noted in Owner correspondence 0310-14-0335, NHD-14-0337, NHD-14-0514 and NHD-14-0517. Other components also sustained damage, but were replaced by the Consortium with extended warranties (reference VSP_VSC_003279). The Consortium has been working with the Owner and capacitor manufacturer (ABB/Mitsubishi) to perform analyses and testing to determine root cause. In the meantime, capacitors have been removed from the Switchyard, which is presently operating at partial capacity due to these capacitor issues.</p>	<p>The Contractor invoice the Owner for the Bytewood and Metro warehouses and Area 18 laydown area construction under the Target Price category per the EPC Agreement, applying the CO 8 cost categories to the invoicing. The total cost for these facilities and laydown area will remain in dispute per the EPC Agreement due to the structural module delay with resolution dependent upon senior executive negotiations.</p>
97	Warranty impact due to delay and specific warranty claims; and extending warranties based on actual completion dates	<p>1. Consortium extends 24 month warranty provision and other warranty provisions of Article 14 of the EPC Agreement to be effective upon the actual Substantial Completion Dates for Units 2 and 3.</p> <p>2. Consortium resolves all outstanding warranty claims, to include the Switchyard capacitor failure claim, to the Owner's satisfaction. This will include component warranties as applicable.</p>	<p>1. Consortium extends 24 month warranty provision and other warranty provisions of Article 14 of the EPC Agreement to be effective upon the actual Substantial Completion Dates for Units 2 and 3.</p> <p>2. Consortium resolves all outstanding warranty claims, to include the Switchyard capacitor failure claim, to the Owner's satisfaction. This will include component warranties as applicable.</p>
98	Cyber Security	<p>The Owner's position is that the Consortium is committed in the EPC Agreement to provide a cyber security program for VCS Units 2 and 3 that complies with AEP-GYN-GIA-104, "AEP1000 Cyber Security Implementation," dated May 2007 (also referred to as TR-104). TR-104 is a requirement included in the AEP1000 Design Control Document (DCD) Revision 16 which is referenced in the EPC Agreement. The Owner acknowledges that the NRC issued Regulatory Guide (RG) 5.71, "Cyber Security programs for Nuclear Facilities," subsequent to the execution of the EPC Agreement and that there is a level of incremental scope of work which has not been satisfactorily resolved to the satisfaction of the Owner. The Owner and Consortium agreed to a Phase 1 Cyber Security CO (#914), which was executed on March 14, 2012. The Owner and Consortium have attempted to negotiate a Phase 2 Cyber Security CO but have been unsuccessful to date. A significant increase in the Consortium's refusal to accept project schedule risk and mandate to Owner a release of the Guaranteed Substantial Completion dates for Unit 2, A Phase 2 Cyber Security technical scope of work has been agreed upon and is included in the latest draft Cyber Security CO dated February 19, 2015 (VSP_VSC_003270). This technical scope is entitled "Technical Description for Consortium for AEP1000 Consortium Cyber Security Scope of Supply." The Owner and Consortium have discussed scopes of work beyond Phase 2, although no Technical Description for Phase 3 has been defined. For example, in a previous draft Cyber Security CO dated February 28, 2013, Phase 3 scope topics were addressed to include potential warehouse modifications to handle storage and handling of Critical Digital Assets (CDA's), the training of all personnel to deal with CDA's and site installation and field Change Notices associated with hardware and software modification. The Owner and Consortium have also had discussions that Phase 3 work would involve dealing with suppliers of equipment for potential smart equipment upgrades. The Owner is concerned that the negotiations on cyber security have been unnecessarily delayed as evidenced by timelines maintained by the Owner and the Consortium's decision to hold up work on cyber security and demobilize personnel earlier this year. It is noted that the Owner had authorized dollars for the Consortium to perform cyber security work during the negotiations and had requested that the Consortium continue with the interim funding provided by the Owner.</p>	<p>Subject to Paragraph 4 of the October 2105 Amendment, Consortium to provide a cyber security program in accordance with RG 5.71, and accept schedule risk to meet Guaranteed Substantial Completion Dates agreed to between Owner and Consortium. All phases of the Cyber Security Program are included in this scope, which also includes the Phase 2 technical scope referenced in the draft CO dated February 19, 2015.</p>

## **Exhibit B**

**Disputed and Returned Payments**  
**Exhibit B**  
**As of August 21, 2015**

**WEC Claim**

Regulatory Delay Claim	\$ 83,518,046
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**Payment Entitlement in Dispute**

Capped Esc due to Structural Module Delay	\$ 6,275,414
Cyber Security	\$ 374,613
Target Invoice Returns (storage, tents, firm price)	\$ 13,289,433
Target Invoice Withholding (10%) Due to Delay and Performance Inefficiencies	\$ 7,657,127
Interest Expense on Returned Invoices	\$ 2,133,198
<b>Total</b>	<b>\$ 29,729,785</b>

**No Dispute, Payments Pending CO Execution**

HW Escalation Calculation	\$ 5,565,845
<b>Total</b>	<b>\$ 5,565,845</b>

**Timing of Payment in Dispute**

Progress Payments	\$ 99,066,205
Milestones Not Complete	\$ 11,124,299
<b>Total</b>	<b>\$ 110,190,504</b>



## **Exhibit C**

**EXHIBIT C**

**Items Not Resolved or Released under October 2015 Amendment**

Description	Reference
Data Turnover and documentation required	
Containment Debris Margin Increase	NND-11-0166; VSP_VSG_001218
Auxiliary Boiler design capability	
Electromagnetic Capability (EMC) with Protection & Safety Monitoring System (PMS) -	
American Society of Mechanical Engineers(ASME) Boiler and Pressure Vessel Code Section VIII pressure vessel over pressure protection	NND-15-0460; VSP_VSG_003682
Site Layout changes, Phase 3, due to security regulatory changes	
Onsite automation/I&C Support to Owner during post initial core load	
Onsite switchyard preoperational test	
Plant Security System (SES) testing	
Plant Security System (SES) Unit 2&3 Computer Integration	

## **Exhibit D**

Confidential Trade Secret Information - Subject to Restricted Procedures

## AGREEMENT

AMENDMENT TO THE ENGINEERING, PROCUREMENT AND CONSTRUCTION AGREEMENT BETWEEN SOUTH CAROLINA ELECTRIC & GAS COMPANY, FOR ITSELF AND AS AGENT FOR THE SOUTH CAROLINA PUBLIC SERVICE AUTHORITY AND A CONSORTIUM CONSISTING OF WESTINGHOUSE ELECTRIC COMPANY LLC AND STONE & WEBSTER, INC., FOR API000@ NUCLEAR POWER PLANTS

THIS AMENDMENT to the Engineering, Procurement and Construction Agreement dated May 23, 2008 ("EPC Agreement") for the API000 Power Plants at the Virgil C. Summer Nuclear Generating Station ("Project") by and between South Carolina Electric & Gas Company, for itself and as agent for the South Carolina Public Service Authority ("Owner") and a consortium consisting of Westinghouse Electric Company LLC ("Westinghouse") and CB&I Stone & Webster, Inc. ("S&W"), (collectively "Contractor") is executed on behalf of Westinghouse, shall be executed on behalf S&W upon the consummation of the Transaction (as defined in the October 2015 Amendment) and shall become effective upon execution by Owner and approval of the Public Service Commission of South Carolina, so long as execution occurs by the 1<sup>st</sup> day of November 2016, unless such approval is waived by the Owner or the date is waived by the Contractor ("Option Amendment"). If execution does not occur by November 1, 2016, this Option Amendment shall be null and void in all respects. Owner and Contractor may be referred to individually as a "Party" or collectively as the "Parties."

In consideration of the mutual promises herein and other good and valuable consideration, the receipt and sufficiency of which the Parties acknowledge, the Parties, intending to be legally bound, stipulate and agree as follows:

1. Except as provided in paragraph 2, all remaining Work under the EPC Agreement as of the Effective Time (defined in the October 2015 Amendment referenced below) shall be converted to a Fixed Price in exchange for the remaining Contract Price being adjusted to \$6.082 billion in current U.S. Dollars. The remaining Contract Price adjustment represents the cost to complete the Project beyond what has been paid through June 30, 2015. Payments made after June 30, 2015 will be credited against the \$6.082 billion amount.
2. The following Time and Material Work is not included in the Fixed Price described in paragraph 1: sales tax, performance bond and insurance premiums, import duties, Mandatory Spare Parts and Extended Equipment Warranty costs (other than the costs associated with the warranty extensions provided for in paragraph 7 of the October 2015 Amendment, because those warranty extensions are at no cost to Owner). This Work will be billed under the existing terms of the EPC Agreement.
3. The categories of Target Price and Firm Price are eliminated.
4. The capitalized terms in this Amendment, except for those defined in this Amendment, shall have the meanings given to them in the EPC Agreement.
5. All provisions of the EPC Agreement not modified, expressly or by necessary implication, remain in full force and effect.

Confidential Trade Secret Information - Subject to Restricted Procedures

IN WITNESS WHEREOF, the Parties have duly executed this Amendment as of the date first above written.

SOUTH CAROLINA ELECTRIC & GAS  
COMPANY, for itself and as agent for South  
Carolina Public Service Authority

By: Kevin Marsh  
Name: KEVIN MARSH  
Title: CEO

WESTINGHOUSE ELECTRIC COMPANY LLC

By: [Signature]  
Name: [Signature]  
Title: President & Chief Executive Officer

STONE & WEBSTER, INC.

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Confidential Trade Secret Information - Subject to Restricted Procedures

**IN WITNESS WHEREOF**, the Parties have duly executed this Amendment as of the date first above written.

SOUTH CAROLINA ELECTRIC & GAS  
COMPANY, for itself and as agent for South  
Carolina Public Service Authority

By:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

WESTINGHOUSE ELECTRIC COMPANY LLC

By:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

CB&I STONE & WEBSTER, INC.

By: David C. Durham

Name: David C. Durham

Title: President



## **Exhibit E**

### **Dispute Review Board Agreement**

THIS DISPUTE REVIEW BOARD AGREEMENT ("DRB Agreement") concerning the Engineering, Procurement and Construction Agreement dated May 23, 2008 ("EPC Agreement") for the AP1000 Power Plants at the Virgil C Summer Nuclear Generating Station ("Project") is effective the 31 day of DECEMBER 2015, by and between South Carolina Electric & Gas Company, for itself and as agent for the South Carolina Public Service Authority ("Owner") and a consortium consisting of Westinghouse Electric Company LLC and Stone & Webster, Inc., (collectively "Contractor"). Owner and Contractor may be referred to individually as a "Party" and collectively as the "Parties."

WHEREAS, the Parties wish to establish a Dispute Resolution Board ("DRB") for addressing all Claims, as defined in the EPC Agreement, and other disputes that may arise out of or relate to the Project and provisionally resolving such claims.

NOW, THEREFORE, in consideration of the recital, the mutual promises herein and other good and valuable consideration, the receipt and sufficiency of which the Parties acknowledge, the Parties, intending to be legally bound, stipulate and agree as follows:

1. Owner and Contractor agree to the establishment of a DRB in accordance with this DRB Agreement to assist in timely, impartial resolution of Claims and other disputes. All Claims and other disputes arising out of or relating to the EPC Agreement shall be governed by this DRB Agreement, until Substantial Completion of both Units.
2. For Claims and other disputes under \$5 million, determinations of the DRB shall be binding on the Parties.
3. For Claims and other disputes of \$5 million or higher, determinations of the DRB shall be treated as binding on the Parties on an interim basis until Substantial Completion of both Units. Upon Substantial Completion of both Units, either Party may proceed de novo with dispute resolution in accordance with Article 27 of the EPC Agreement. Determinations of the DRB will not be admissible in any de novo proceedings pursuant to Article 27 of the EPC Agreement.
4. For Claims and other disputes of \$5 million or higher, Owner and Contractor shall submit their written acceptance or rejection of the DRB's report concurrently to the other Party and to the DRB within fourteen (14) days of receipt of the report. Failure by either Party to accept or reject within the specified period shall be deemed acceptance of the report by that Party. If both Parties accept the report, then it shall be final, without qualification. If one or both Parties reject the report, they shall nonetheless treat the report as binding until thirty (30) days after Substantial Completion of both Units, at which point the report will have no force or effect.
5. The process outlined in this DRB Agreement shall be the exclusive dispute resolution process for all Claims and other disputes under the EPC Agreement and shall be in lieu of the process set forth in Articles 27.3 and 27.4 of the EPC Agreement, until Substantial Completion of both Units. Thereafter, for Claims or other disputes covered by Paragraph 3 of this DRB Agreement, the Parties may proceed as stated in Paragraph 3.

6. Within thirty (30) days of the execution of the November 2015 Amendment, each Party shall submit to the other Party for approval the names of its nominees for membership on the DRB. The Parties shall mutually agree on the three members of the DRB. Once constituted, the DRB members shall designate one of them as Chair of the DRB. The DRB shall serve until Substantial Completion of both Units.

7. Members of the DRB shall be experienced in the interpretation of contract documents, the resolution of construction disputes, and with complex power plant projects. At least one of the DRB members must be a licensed attorney. To assist the Parties in the review and approval process, nominated members shall provide the following, in addition to the nominee's full name and contact information, to both Parties:

- A. Resume showing construction experience qualifying the person as a DRB member.
- B. Resume showing past DRB participation, if any. This resume will each DRB assignment separately, and state the name and location of the project, dates of DRB service, name of owner, name of contractor, contract value, nominating party if applicable, names of the other DRB members, and the number of disputes heard.
- C. All three members of the DRB are to be neutral and must affirm their neutrality, under oath, once the DRB is fully constituted and before the DRB takes any action.
- D. Disclosure statement describing past, present, and anticipated relationships or financial ties, including indirect relationships through the nominee's full-time employer, if any, to the Project, and with the Parties and with all other entities directly and indirectly involved in the EPC Contract. Entities indirectly involved include Fluor, designers, architects, engineers, or other professional service firms or consultants, joint-venture partners, subcontractors of any tier, and suppliers on the Project. The disclosure statement will also disclose close professional or personal relationships with key members of the Parties and these entities.
- E. Neutrality and disclosure is a continuing obligation of all DRB members throughout the life of the EPC Contract.
- F. Each member of the DRB shall execute non-disclosure agreements as required by the Parties.
- G. No DRB member shall be allowed to act as an arbitrator or appear as a witness in any subsequent arbitration or litigation related to or arising out of the EPC Agreement.

8. Once fully constituted, the DRB will visit the project site and meet with representatives of the Parties at periodic intervals and as requested by the Parties. Any discussion and field observation shall be attended by personnel of the Owner and Contractor.

9. Owner and Contractor shall enter into good-faith negotiations to settle a dispute before referring such dispute to the DRB. These good-faith negotiations shall involve full and timely disclosure of each Party's position to the other Party, including the exchange, where applicable, of pertinent supporting records, analyses, expert reports, and similar documentation, and shall proceed without delay following the inception of the dispute. Such good-faith negotiations may involve the solicitation and rendering of a DRB advisory opinion as described herein.

10. Either Owner or Contractor may refer a dispute to the DRB. The dispute referral shall be made in writing to the DRB Chair with a copy concurrently provided to the other DRB members and the other Party.

11. The dispute referral shall concisely define the nature and specifics of the dispute that are to be considered by the DRB and the scope of the determination requested. The DRB Chair shall confer with the Parties to establish a due date for delivering pre-hearing submittals, and a date, time, and location for convening the DRB hearing. Hearings shall be convened, at a location mutually agreed by the Parties. Absent such agreement by the Parties, the DRB shall determine the location of the hearings.

12. The procedures governing the hearings shall be established by agreement of the Parties. Absent such agreement, the DRB shall establish such hearing procedures.

13. The DRB's determination of a dispute will be formalized in a written report with format as determined by the DRB and signed by all DRB members. The report shall consist of a concise description of the dispute, short statements of each Party's position, findings as to the facts of the dispute, discussion and rationale for the determination, and the determination. The report shall be submitted concurrently to the Parties, no later than thirty (30) days after completion of the hearing as agreed by all Parties.

14. Owner and Contractor shall each bear their respective costs and attorney's fees. Owner and Contractor shall equally bear the cost of the DRB's services.

IN WITNESS WHEREOF, the Parties have duly executed this DRB Agreement as of the date first above written.

SOUTH CAROLINA ELECTRIC & GAS  
COMPANY, for itself and as agent for South  
Carolina Public Service Authority

By:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

WESTINGHOUSE ELECTRIC COMPANY LLC

By: Michael T. Sweeney

Name: Michael T. Sweeney

Title: Secretary

CB&I STONE & WEBSTER, INC.

By: \_\_\_\_\_

Name: David C. Durham

Title: President



10. Either Owner or Contractor may refer a dispute to the DRB. The dispute referral shall be made in writing to the DRB Chair with a copy concurrently provided to the other DRB members and the other Party.

11. The dispute referral shall concisely define the nature and specifics of the dispute that are to be considered by the DRB and the scope of the determination requested. The DRB Chair shall confer with the Parties to establish a due date for delivering pre-hearing submittals, and a date, time, and location for convening the DRB hearing. Hearings shall be convened, at a location mutually agreed by the Parties. Absent such agreement by the Parties, the DRB shall determine the location of the hearings.

12. The procedures governing the hearings shall be established by agreement of the Parties. Absent such agreement, the DRB shall establish such hearing procedures.

13. The DRB's determination of a dispute will be formalized in a written report with format as determined by the DRB and signed by all DRB members. The report shall consist of a concise description of the dispute, short statements of each Party's position, findings as to the facts of the dispute, discussion and rationale for the determination, and the determination. The report shall be submitted concurrently to the Parties, no later than thirty (30) days after completion of the hearing as agreed by all Parties.

14. Owner and Contractor shall each bear their respective costs and attorney's fees. Owner and Contractor shall equally bear the cost of the DRB's services.

IN WITNESS WHEREOF, the Parties have duly executed this DRB Agreement as of the date first above written.

SOUTH CAROLINA ELECTRIC & GAS  
COMPANY, for itself and as agent for South  
Carolina Public Service Authority

By:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

WESTINGHOUSE ELECTRIC COMPANY LLC

By: \_\_\_\_\_

Name: Michael T. Sweeney

Title: Secretary

CB&I STONE & WEBSTER, INC.

By: 

Name: David C. Durham

Title: President

10. Either Owner or Contractor may refer a dispute to the DRB. The dispute referral shall be made in writing to the DRB Chair with a copy concurrently provided to the other DRB members and the other Party.

11. The dispute referral shall concisely define the nature and specifics of the dispute that are to be considered by the DRB and the scope of the determination requested. The DRB Chair shall confer with the Parties to establish a due date for delivering pre-hearing submittals, and a date, time, and location for convening the DRB hearing. Hearings shall be convened, at a location mutually agreed by the Parties. Absent such agreement by the Parties, the DRB shall determine the location of the hearings.

12. The procedures governing the hearings shall be established by agreement of the Parties. Absent such agreement, the DRB shall establish such hearing procedures.

13. The DRB's determination of a dispute will be formalized in a written report with format as determined by the DRB and signed by all DRB members. The report shall consist of a concise description of the dispute, short statements of each Party's position, findings as to the facts of the dispute, discussion and rationale for the determination, and the determination. The report shall be submitted concurrently to the Parties, no later than thirty (30) days after completion of the hearing as agreed by all Parties.

14. Owner and Contractor shall each bear their respective costs and attorney's fees. Owner and Contractor shall equally bear the cost of the DRB's services.

IN WITNESS WHEREOF, the Parties have duly executed this DRB Agreement as of the date first above written.

SOUTH CAROLINA ELECTRIC & GAS  
COMPANY, for itself and as agent for South  
Carolina Public Service Authority

By: \_\_\_\_\_

Name: St. C. Bal

Title: PRESIDENT, GENERATION & TRANSMISSION

WESTINGHOUSE ELECTRIC COMPANY LLC

By: Michael T. Sweeney

Name: Michael T. Sweeney

Title: Secretary

CB&I STONE & WEBSTER, INC.

By: \_\_\_\_\_

Name: David C. Durham

Title: President



## **Exhibit F**

## **EXHIBIT F**

### **CONSENT OF GUARANTOR**

**This Consent** is made by TOSHIBA CORPORATION (“Guarantor”), a corporation duly organized and existing under the laws of Japan and the indirect parent of Westinghouse Electric Company LLC (“Westinghouse”).

**WHEREAS**, Westinghouse and Stone & Webster, Inc. (“Stone & Webster”, and collectively with Westinghouse, the “Contractor”) and South Carolina Electric & Gas Company, for itself and as agent for the South Carolina Public Service Authority (collectively, the “Counterparty”) are parties to the Engineering, Procurement and Construction Agreement between the Contractor and the Counterparty, dated as of May 23, 2008 (the “Agreement”); and

**WHEREAS**, in connection with the Agreement, Guarantor executed and delivered to Counterparty a guaranty of the payment obligations of Westinghouse under the terms of the Agreement (the “Guaranty”); and

**WHEREAS**, the Agreement is being amended by an Amendment dated October 27, 2015 (the “October 2015 Amendment”); and

**WHEREAS**, Guarantor, as indirect parent of Westinghouse, shall receive benefit from the transaction contemplated by the Agreement as previously amended and as amended by the October 2015 Amendment and has agreed to give this Consent to provide assurance for Westinghouse’s payment obligations in connection with the Agreement as so amended; and

**WHEREAS**, Guarantor acknowledges the execution and delivery of this Consent is required by the terms of the October 2015 Amendment.

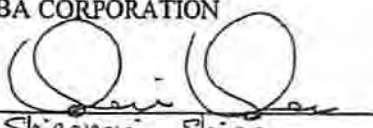
**NOW, THEREFORE**, in consideration of the premises and other good and valuable consideration, the adequacy, receipt and sufficiency of which are hereby acknowledged, Guarantor hereby agrees as follows:

1. Guarantor acknowledges the terms of the October 2015 Amendment.
2. The definition of Guaranteed Obligations in the Guaranty includes all payment obligations of Westinghouse under the terms of the Agreement, as previously amended and as amended by the October 2015 Amendment.
3. Guarantor hereby reaffirms the Guaranty and agrees that, except as provided herein, the Guaranty shall remain unchanged and in full force and effect. Each and every term, covenant and condition of the Guaranty is hereby incorporated herein such that the Guaranty and this Consent shall be read and construed as one instrument.
4. The validity, construction, and performance of this Consent of Guarantor shall be governed by and interpreted in accordance with the laws of the State of New York, without

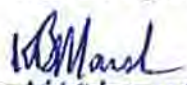
giving effect to the principles thereof relating to conflicts of laws except Section 5-1401 of the New York General Obligations Law.

IN WITNESS WHEREOF, Guarantor has caused this Consent to be executed in its corporate name by its duly authorized representative.

TOSHIBA CORPORATION

By:   
Name: Shigenori Shiga  
Title: Representative Executive Officer  
Date: October 27, 2015

Acknowledged and Agreed by Counterparty as of this 27 day of October, 2015, by:

  
Name: KEVIN B. MARSH  
Title: CEO, SCANA CORP.

## MUTUAL RELEASE

This Mutual Release ("Mutual Release") is executed this 27th day of October, 2015, by South Carolina Electric & Gas Company, a South Carolina corporation having a place of business in Cayce, South Carolina, for itself and as agent for the South Carolina Public Service Authority, a body corporate and politic created by the laws of the State of South Carolina (collectively, "Owners") and Chicago Bridge & Iron Company N.V. ("CB&I"), a corporation organized under the laws of the Netherlands.

## RECITALS

**WHEREAS**, Owners and a consortium consisting of Westinghouse Electric Company LLC ("Westinghouse") and CB&I Stone & Webster, Inc. ("S&W") (collectively, the "Contractor") entered into an Engineering, Procurement and Construction Agreement with an effective date of May 23, 2008 (as amended or supplemented, the "EPC Agreement") pursuant to which the Contractor agreed to assist Owners in the licensing of and to design, engineer, procure, construct and test two AP1000 Nuclear Power Plants and related facilities, structures and improvements known as Units 2 and 3 located at the V.C. Summer station in Jenkinsville, South Carolina, and owned by Owners (the "Project");

**WHEREAS**, pursuant to the EPC Agreement, S&W furnished to Owners a Corporate Guarantee dated and effective as of May 23, 2008 and issued and executed by S&W's then-ultimate holding corporation, The Shaw Group, Inc. ("Shaw Group") (as amended or supplemented, the "S&W Parent Guarantee");

**WHEREAS**, thereafter, in connection with the acquisition by CB&I of Shaw Group, CB&I executed and furnished to Owners a Corporate Guarantee dated April 29, 2013 (the "CB&I Guarantee"), which replaced the S&W Parent Guarantee;

**WHEREAS**, Contractor has submitted various notices of Change and Change Dispute Notices pursuant to the EPC Agreement that remain unresolved and various commercial issues, Change Disputes and Claims (as defined in the EPC Agreement) are pending under the EPC Agreement (collectively, "EPC Claims");

**WHEREAS**, simultaneously with the execution and delivery of this Mutual Release, Owners and Westinghouse are entering into a binding Settlement and Release Agreement (the "Settlement Agreement"), with respect to, among other things, the EPC Claims;

**WHEREAS**, Westinghouse, S&W, an affiliate of Westinghouse ("Purchaser"), and CB&I are entering into a Purchase Agreement pursuant to which, among other things, Purchaser will purchase all of the outstanding capital stock of S&W; and

**WHEREAS**, effective upon the Effective Time (as defined in Paragraph 3), Owners and CB&I agree to release one another from any and all past, current and future duties, obligations, claims and liabilities arising out of or related to the EPC Claims, the EPC Agreement, the Project, the S&W Parent Guarantee and the CB&I Guarantee.

**NOW, THEREFORE**, in consideration of the recitals and the mutual promises, covenants and agreements contained in the Settlement Agreement and herein, and for other good and valuable consideration, the receipt, adequacy and sufficiency of which are hereby acknowledged, Owners and CB&I mutually, release one another as follows.

### **RELEASE**

1. Effective upon the Effective Time, Owners, for themselves and their respective officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries and affiliated entities, heirs, executors and administrators (collectively, the "Owner Releasing Parties") and each of them, hereby unconditionally and irrevocably fully release, forever discharge and covenant not to sue, except for the Excepted Party as defined in Paragraph 2 hereof, CB&I and its past, present, and future officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries, and affiliated entities, heirs, executors and administrators (collectively, the "CB&I Released Parties"), and each of them, from any and all manner of actions, controversies, suits, matters, liens, rights, liabilities, losses, debts, dues, damages, claims, guarantees, warranties, judgments, bonds, executions, obligations, accounts, fines, regulatory penalties (whether civil or criminal), costs and expenses (including attorneys' fees) and demands (collectively, "Claims/Obligations") of every nature, kind and description whatsoever in law or in equity, whether known or unknown, or whether suspected or unsuspected, or whether matured or un-matured, whether liquidated or unliquidated, under any theory, including joint and several liability, which Owners had, now have, or hereafter can, shall or may have against CB&I or any of the other CB&I Released Parties arising out of any manner or event relating to, or otherwise in connection with or concerning, the EPC Claims, the EPC Agreement, the Project, the S&W Parent Guarantee and the CB&I Guarantee.

2. This Mutual Release is not in favor, and does not inure to the benefit, of S&W (being referred to herein as the "Excepted Party") and it being understood and acknowledged that any release in favor of S&W is solely as set forth in the Settlement Agreement. Except for the Excepted Party as defined in Paragraph 1 hereof, effective upon the Effective Time, CB&I, for itself and its respective officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries and affiliated entities (but only to the extent any such subsidiary or affiliated entity is a subsidiary or affiliated entity after the Effective Time), heirs, executors and administrators (collectively, the "CB&I Releasing Parties") and each of them, hereby unconditionally and irrevocably fully release, forever discharge and covenant not to sue, Owners and their past, present, and future officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries, and affiliated entities, heirs, executors and administrators (collectively, the "Owners Released Parties"), and each of them, from any and all manner of actions, controversies, suits, matters, liens, rights, liabilities, losses, debts, dues, damages, claims, guarantees, warranties, judgments, bonds, executions, obligations, accounts, fines, regulatory penalties (whether civil or criminal), costs and expenses (including

attorneys' fees) and demands (collectively, "Claims/Obligations") of every nature, kind and description whatsoever in law or in equity, whether known or unknown, or whether suspected or unsuspected, or whether matured or un-matured, whether liquidated or unliquidated, under any theory, including joint and several liability, which CB&I had, now have, or hereafter can, shall or may have against Owners or any of the other Owners Released Parties arising out of any manner or event relating to, or otherwise in connection with or concerning, the EPC Claims, the EPC Agreement, the Project, the S&W Parent Guarantee and the CB&I Guarantee.

3. This Mutual Release does not release any rights of S&W, the Excepted Party, it being understood and acknowledged that any release by S&W is solely as set forth in the Settlement Agreement.

4. Westinghouse and Owners have agreed that the Settlement Agreement will automatically become effective upon the closing of the purchase by Westinghouse or an affiliate of Westinghouse of all of the outstanding capital stock of S&W (such time of closing, the "Effective Time").

5. This Mutual Release and the application and interpretation thereof shall be governed exclusively by the laws of the State of New York without regard to conflicts of laws principles.

6. This Mutual Release shall be fully binding upon each Owner, CB&I and their respective legal representatives, successors and assigns.

7. The releases contemplated by Section 1 and 2 are intended to be as broad as permitted by law, provided that nothing in Section 1 or 2 shall apply to any action by any releasee to enforce the rights and obligations imposed by this Mutual Release. Without limiting the foregoing, for the avoidance of doubt, the releases contemplated by Section 1 and 2 are intended to, and do, extinguish suspected, unmatured, unliquidated and unknown Claims/Obligations even if, confirmation, maturation or knowledge of those Claims/Obligations on the date hereof would have affected the decision to enter into this Mutual Release. The release of suspected, unmatured, unliquidated or unknown Claims/Obligations was separately bargained for and was a key element of this Mutual Release, relied upon by each party in entering this Mutual Release. The Owner Releasing Parties and the CB&I Releasing Parties shall be deemed to have, and by execution of this Mutual Release shall have, expressly waived and relinquished, to the fullest extent permitted by law, any rights or benefits they may have under state law, federal law, foreign law or common law that may have the effect of limiting the release set forth in Section 1, including any rights or benefits conferred by Section 1542 of the California Civil Code or any provision similar, comparable or equivalent to Section 1542 or successor provision to Section 1542 of the California Civil Code, which provides that: A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR.



8. Each of the persons executing this Mutual Release on behalf of its respective principals warrants that he or she is legally entitled to enter into this Mutual Release and release the CB&I Released Parties and the Owner Released Parties from every claim and liability, whether potential or actual, herein referred to, and that he or she has the authority to bind his or her respective principals and has full authority to enter into this Mutual Release.


9. Owners and CB&I acknowledge and represent that they have each relied solely upon facts obtained from their own independent investigations in executing this Mutual Release and that they each have not relied upon any statements or representations of any nature from the parties to the Settlement Agreement or any other individuals or entities, or such other parties', individuals' or entities' attorneys or representatives. Each Owner and CB&I represent that they have had sufficient opportunity to consult their own legal counsel with regard to the negotiation and preparation, as well as the scope and effect, of this Mutual Release.

10. Owners and CB&I agree to execute any further documents necessary and take such other actions as to effectuate this Mutual Release.

11. This Mutual Release may be executed in counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

**IN WITNESS WHEREOF**, Owners and CB&I execute this Release by their duly authorized representatives.

**South Carolina Electric & Gas Company,**  
for itself and as agent for the South Carolina Public Service Authority

By 

Title Chairman & CEO

Date October 27 2015

**Chicago Bridge & Iron Company N.V.**

By \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

8. Each of the persons executing this Mutual Release on behalf of its respective principals warrants that he or she is legally entitled to enter into this Mutual Release and release the CB&I Released Parties and the Owner Released Parties from every claim and liability, whether potential or actual, herein referred to, and that he or she has the authority to bind his or her respective principals and has full authority to enter into this Mutual Release.

9. Owners and CB&I acknowledge and represent that they have each relied solely upon facts obtained from their own independent investigations in executing this Mutual Release and that they each have not relied upon any statements or representations of any nature from the parties to the Settlement Agreement or any other individuals or entities, or such other parties', individuals' or entities' attorneys or representatives. Each Owner and CB&I represent that they have had sufficient opportunity to consult their own legal counsel with regard to the negotiation and preparation, as well as the scope and effect, of this Mutual Release.

10. Owners and CB&I agree to execute any further documents necessary and take such other actions as to effectuate this Mutual Release.

11. This Mutual Release may be executed in counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

**IN WITNESS WHEREOF**, Owners and CB&I execute this Release by their duly authorized representatives.

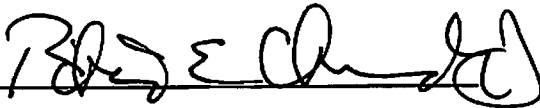
**South Carolina Electric & Gas Company,**  
for itself and as agent for the South Carolina Public Service Authority

By \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

**Chicago Bridge & Iron Company N.V.**

By  \_\_\_\_\_

Title VP, Chief legal officer & Sec'y.

Date Oct 27, 2015

## **MUTUAL RELEASE**

This Mutual Release is entered into this 27th day of October, 2015, and becomes effective as described herein, by and among Westinghouse Electric Company LLC, a Delaware limited liability company having a place of business in Cranberry, Pennsylvania ("Westinghouse"), CB&I Stone & Webster, Inc., a Louisiana corporation with a place of business in Charlotte, North Carolina ("S&W"), and South Carolina Electric & Gas Company ("SCE&G"), for itself and as agent for the South Carolina Public Service Authority, a body corporate and politic created by the laws of South Carolina ("Santee Cooper") (collectively "Owners"). Westinghouse, S&W and Owners may be referred to individually as "Party" or collectively as "Parties."

## **RECITALS**

**WHEREAS**, Owners and a consortium consisting of Westinghouse and S&W (collectively "Contractor") entered into an Engineering, Procurement and Construction Agreement on May 23, 2008 ("EPC Agreement") pursuant to which Contractor agreed to design and construct two new nuclear electrical generating units known as V.C. Summer Units 2 and 3 (the "Units") located at the V.C. Summer Nuclear Generating Station in Jenkinsville, South Carolina (the "Project");

**WHEREAS**, Contractor has submitted various notices of Change and Change Dispute Notices pursuant to the EPC Agreement that remain unresolved and various commercial issues, Change Disputes and Claims (as defined in the EPC Agreement) are pending under the EPC Agreement (collectively, "EPC Claims");

**WHEREAS**, Owners and Westinghouse are entering into a binding Amendment Agreement ("October 2015 Amendment") with respect to, among other things, the EPC Claims;

**WHEREAS**, a Westinghouse affiliate, Chicago Bridge & Iron Company N.V. ("CB&I"), and S&W are entering into a Stock Purchase Agreement pursuant to which, among other things, Westinghouse or an affiliate of Westinghouse will purchase all of the outstanding capital stock of S&W (the "SPA");

**WHEREAS**, upon the execution the SPA, Westinghouse shall execute this Mutual Release on its own behalf, and upon the consummation of the SPA (the "Effective Time") shall cause S&W to execute this Mutual Release on behalf of S&W; and

**WHEREAS**, upon execution of this Mutual Release by Westinghouse and S&W, this Mutual Release shall become effective as of the Effective Time, and in the event the SPA is not consummated, this Mutual Release shall not become effective and shall be null and void in all respects.

**NOW, THEREFORE**, in consideration of the recitals and the mutual promises, covenants and agreements contained in the October 2015 Amendment and herein, and for other good and valuable consideration, the receipt, adequacy and sufficiency of which are hereby acknowledged, Owners, Westinghouse and S&W hereby provide mutual releases as follows.

**RELEASE**

1. Except as otherwise provided in the October 2015 Amendment (including Exhibit C to the October 2015 Amendment), upon the Effective Time, Owners, for themselves and their respective officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries and affiliated corporations, heirs, executors and administrators and each of them, hereby unconditionally and irrevocably fully release, forever discharge and covenant not to sue Westinghouse, S&W and their past, present, and future officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries, and affiliated corporations, and each of them, from any and all manner of actions, controversies, suits, liens, losses, debts, dues, damages, claims, attorney fees, guarantees, warranties, judgments, bonds, executions and demands of every nature, kind and description whatsoever in law or in equity, whether known or unknown, or whether suspected or unsuspected, or whether matured or unmatured, whether liquidated or unliquidated, under any theory, including joint and several liability, which Owners had, now have, or hereafter can, shall or may have against Westinghouse and/or S&W for any events or circumstances occurring as of the Effective Time and arising out of any manner or event relating to, or otherwise in connection with or concerning, the EPC Claims, the EPC Agreement and the Project.

2. Except as otherwise provided in the October 2015 Amendment (including Exhibit C to the October 2015 Amendment), upon the Effective Time, Westinghouse and S&W, for themselves and their respective officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries and affiliated corporations, heirs, executors and administrators and each of them, hereby unconditionally and irrevocably fully release, forever discharge and covenant not to sue Owners and their past, present, and future officers, agents, directors, partners, managing members, stockholders, owners, employees, attorneys, advisors, representatives, insurers, sureties, predecessors, successors, assigns, parents, subsidiaries, and affiliated corporations, and each of them, from any and all manner of actions, controversies, suits, liens, losses, debts, dues, damages, claims, attorney fees, guarantees, warranties, judgments, bonds, executions and demands of every nature, kind and description whatsoever in law or in equity, whether known or unknown, or whether suspected or unsuspected, or whether matured or unmatured, whether liquidated or unliquidated, under any theory, including joint and several liability, which Westinghouse and/or S&W had, now have, or hereafter can, shall or may have against Owners for any events or circumstances occurring as of the Effective Time and arising out of any manner or event relating to, or otherwise in connection with or concerning, the EPC Claims, the EPC Agreement and the Project.

3. This Mutual Release and the application and interpretation thereof shall be governed exclusively by the laws of the State of New York without regard to conflicts of laws principles.

4. This Mutual Release shall be fully binding upon Owners, Westinghouse and S&W and their respective legal representatives, successors and assigns.

5. Each of the persons executing this Mutual Release on behalf of their respective principals warrants that he or she is legally entitled to enter into this Mutual Release and release every claim and liability, whether potential or actual, herein referred to, and that he or she has the authority to bind his or her respective principals and has full authority to enter into this Mutual Release.

6. Owners, Westinghouse and S&W acknowledge and represent that each has had sufficient opportunity to consult its own legal counsel with regard to the negotiation and preparation, as well as the scope and effect, of this Mutual Release.

7. Owners, Westinghouse and S&W agree to execute any further documents necessary and take such other actions as to effectuate this Mutual Release.

8. This Mutual Release may be executed in counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties execute this Mutual Release by their duly authorized representatives.

Westinghouse Electric Company LLC

CB&I Stone & Webster, Inc.

By



By

\_\_\_\_\_

Title President & Chief Executive Officer

Title \_\_\_\_\_

Date October 27, 2015

Date \_\_\_\_\_

South Carolina Electric & Gas Company,  
for itself and as agent for the South  
Carolina Public Service Authority

By



Title Chairman - CEO

Date October 27, 2015



3. This Mutual Release and the application and interpretation thereof shall be governed exclusively by the laws of the State of New York without regard to conflicts of laws principles.

4. This Mutual Release shall be fully binding upon Owners, Westinghouse and S&W and their respective legal representatives, successors and assigns.

5. Each of the persons executing this Mutual Release on behalf of their respective principals warrants that he or she is legally entitled to enter into this Mutual Release and release every claim and liability, whether potential or actual, herein referred to, and that he or she has the authority to bind his or her respective principals and has full authority to enter into this Mutual Release.

6. Owners, Westinghouse and S&W acknowledge and represent that each has had sufficient opportunity to consult its own legal counsel with regard to the negotiation and preparation, as well as the scope and effect, of this Mutual Release.

7. Owners, Westinghouse and S&W agree to execute any further documents necessary and take such other actions as to effectuate this Mutual Release.

8. This Mutual Release may be executed in counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

**IN WITNESS WHEREOF**, the Parties execute this Mutual Release by their duly authorized representatives.

**Westinghouse Electric Company LLC**

By \_\_\_\_\_

Title President & Chief Executive Officer

Date October 27, 2015

**CB&I Stone & Webster, Inc.**

By \_\_\_\_\_

Title President

Date 12/31/15

**South Carolina Electric & Gas Company,  
for itself and as agent for the South  
Carolina Public Service Authority**

By \_\_\_\_\_

Title Chairman - CEO

Date October 27 2015



EXHIBIT NO. #22  
WITNESS: Prane  
DATE 9-25-18  
THOMPSON COURT REPORTING INC.

**DIRECT TESTIMONY OF**

**CARLETTE L. WALKER**

**ON BEHALF OF**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY**

**DOCKET NO. 2015-103-E**

1 **Q. PLEASE STATE YOUR FULL NAME AND BUSINESS ADDRESS.**

2 A. My name is Carlette L. Walker. My business address is Highway 215 &  
3 Bradham Boulevard, Jenkinsville, South Carolina.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am employed by SCANA Services, Inc. as Vice President for Nuclear  
6 Finance Administration. I am testifying on behalf of South Carolina Electric &  
7 Gas Company ("SCE&G" or the "Company").

8 **Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS**  
9 **EXPERIENCE.**

10 A. I am a 1981 graduate, cum laude, of the University of South Carolina with a  
11 Bachelor of Science Degree in Accounting. Following graduation, I worked for  
12 two years in public accounting and became licensed as a Certified Public  
13 Accountant in the State of South Carolina. In 1983, I joined SCE&G's Internal  
14 Audit Department. After four years in Internal Audit, I accepted an accounting  
15 supervisory position with South Carolina Pipeline Corporation ("SCPC"). In  
16 1994, I was promoted to Manager of SCPC's accounting department, and in 1997,

1 I was promoted to the position of Controller for that company. In 1998, I accepted  
2 the position of SCE&G's Assistant Controller - Electric Generation, and in 1999 I  
3 was promoted to Assistant Controller - SCE&G. Effective in 2002, my  
4 responsibilities as Assistant Controller were increased to include all SCANA  
5 regulated subsidiaries. In 2006, I was promoted to Corporate Compliance and  
6 Ethics and Audit Officer. In 2009, I assumed my current position as Vice  
7 President for Nuclear Finance Administration. I am currently a member of the  
8 American Institute of Certified Public Accountants and the South Carolina  
9 Association of Certified Public Accountants.

10 **Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION IN THE**  
11 **PAST?**

12 **A.** Yes. I have testified before the Public Service Commission of South  
13 Carolina (the "Commission") in several past proceedings.

14 **Q. HAVE YOU TESTIFIED BEFORE THE COMMISSION IN PREVIOUS**  
15 **PROCEEDINGS FILED BY THE COMPANY UNDER THE BASE LOAD**  
16 **REVIEW ACT?**

17 **A.** Yes. I testified in Docket No. 2009-293-E, Docket No. 2010-376-E, and  
18 Docket No. 2012-203-E filed by the Company under the Base Load Review Act  
19 ("BLRA"). I respectfully ask that the Commission take judicial notice of its own  
20 files in those three previous dockets and receive as evidence in this case my  
21 prefiled testimony and exhibits as such testimony and exhibits were accepted into  
22 the evidence of record in each of these dockets.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. The purpose of my testimony is to present the accounting, budgeting and forecasting information related to the updates in cost schedules proposed in this proceeding. As part of my testimony, I sponsor the following exhibits:

- Exhibit No. \_\_ (CLW-1), which is an updated schedule of capital cost for construction of V.C. Summer Nuclear Station Units 2 and 3 (the “Units”). This exhibit is identical to Exhibit 2 to the Petition. If approved by the Commission, this schedule would then become the approved capital cost schedule for the Units under the Base Load Review Act, taking the place of and superseding Exhibit F as approved in Order No. 2009-104(A), Order Exhibit No. 2 as approved in Order No. 2010-12, Order Exhibit No. 1 as approved in Order No. 2011-345, and Order Exhibit No. 1 as approved in Order No. 2012-884.
- Exhibit No. \_\_ (CLW-2), which is identical to Exhibit 3 to the Petition and shows the relative changes to the capital cost schedule comparing the updated schedule of capital cost to the schedule approved in Order No. 2009-104(A), and updated by Order Nos. 2010-12, 2011-345, and 2012-884.
- Exhibit No. \_\_ (CLW-3), which is identical to Exhibit No. 4 of the Petition and provides a summary reconciliation of the changes in forecasted cost shown in Exhibit No. \_\_ (CLW-1) to those approved in Order No. 2012-

1           884, as well as a comparison of the escalation indices in effect under Order  
2           No. 2012-884 to those currently in effect.

- 3           • Exhibit No. \_\_ (CLW-4), which summarizes the original capital cost  
4           approved in Order No. 2009-104(A), each of the subsequent capital cost  
5           schedule changes, and the change requested in this proceeding broken  
6           down according to the nine cost categories recognized in the Commission's  
7           BLRA orders.
- 8           • Exhibit No. \_\_ (CLW-5), which shows the changes in forecasted cost  
9           broken down according to the nine cost categories recognized in the  
10          Commission's BLRA orders, as well as the changes in cost broken down  
11          into the categories and subcategories of the previously described cost  
12          adjustments.
- 13          • Exhibit No. \_\_ (CLW-6), which reflects the increased cost for the New  
14          Nuclear Deployment ("NND") and non-NND cost centers that SCE&G  
15          anticipates will charge cost to the project and which identifies the delay,  
16          non-delay, and total cost impacts for each functional area.
- 17          • Exhibit No. \_\_ (CLW-7), which reflects the increased cost for the NND and  
18          non-NND cost centers that SCE&G anticipates will charge cost to the  
19          project and which identifies the labor, non-labor, and total cost impacts for  
20          each functional area.

1   **Q.   WHAT REQUEST IS THE COMPANY MAKING IN THIS DOCKET**  
2       **WITH REGARD TO THE CAPITAL COST SCHEDULE?**

3   A.       SCE&G is requesting that the Commission approve Exhibit No. \_\_ (CLW-  
4       1) as the updated and approved capital cost schedule for the construction of the  
5       Units going forward.

6   **Q.   WHAT IS THE AUTHORITY FOR THIS REQUEST?**

7   A.       As the South Carolina Supreme Court recognized in its opinion in *South*  
8       *Carolina Energy Users Comm. v. South Carolina Pub. Serv. Comm'n*, 388 S.C.  
9       486, 697 S.E.2d 587 (2010) ("2010 BLRA Supreme Court Opinion"), changes to  
10       the approved capital cost schedule are authorized under S.C. Code Ann. § 58-33-  
11       270(E). Under that statute, modifications to the approved schedule of capital cost  
12       are appropriate so long as they are not the result of imprudence by the utility.

13   **Q.   HAS THE COMPANY PREVIOUSLY REQUESTED THAT THE**  
14       **COMMISSION APPROVE CHANGES TO THE CAPITAL COST**  
15       **SCHEDULE OF THE PROJECT?**

16   A.       Yes. The Company has requested approval to revise the capital cost  
17       schedule on three prior occasions, in Docket Nos. 2009-293-E, 2010-376-E, and  
18       2012-203-E. In each instance, the Commission approved the requested change  
19       and determined that the adjustments were reasonable and prudent. Exhibit No. \_\_  
20       (CLW-4) summarizes the original capital cost approved in Order No. 2009-  
21       104(A), each of the three subsequent capital cost schedule changes, and the change

1 requested in this proceeding broken down according to the nine cost categories  
2 recognized in the Commission's BLRA orders.

3 **Q. PLEASE DESCRIBE HOW YOU WILL DISCUSS THE ADJUSTMENTS**  
4 **TO THE CAPITAL COST SCHEDULE SCE&G SEEKS APPROVAL TO**  
5 **MAKE IN THIS PROCEEDING.**

6 A. My testimony will address each of the adjustments the Company proposes  
7 to make in this proceeding. As shown in Chart A, below, these changes, which  
8 revise, modify, and update the schedules that were approved in Order No. 2009-  
9 104(A) and updated in Order Nos. 2010-12, 2011-345, and 2012-884, reflect an  
10 increase to the Total Base Project Cost in 2007 dollars of approximately \$698  
11 million. After accounting for escalation rates updated as of July 2014 and  
12 Allowance for Funds Used During Construction ("AFUDC"), as provided for in  
13 Order No. 2009-104(A), the gross construction cost of the Units is projected to  
14 increase approximately \$1.07 billion.

15  
16  
17 **[CHART A IS ON THE FOLLOWING PAGE]**  
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Chart A

<b><u>ANALYSIS OF UPDATED PROJECT COST</u></b>		
<b><u>(\$000)</u></b>		
<b>Updated EPC Contract Cost</b>		
1	Delay and Other EAC Cost	
2	Delay Cost	\$ 228,138
3	Revised Productivity and Labor Ratios	\$ 154,779
4	Additional Time and Materials Scope of Work	\$ 27,411
5	<b>Total Delay and Other EAC Cost</b>	<b>\$ 410,328</b>
6	Liquidated Damages	\$ (85,525)
7	<b>Total Delay and Other EAC Cost (net of Liquidated Damages)</b>	<b>\$ 324,803</b>
8	Changes to the EAC Cost Due to Design Finalization	\$ 71,899
9	Changes in EPC Cost Due to Change Orders	\$ 56,540
10	Switchyard Cost Reallocation	\$ (107)
11	<b>Total EPC Cost</b>	<b>\$ 453,136</b>
<b>Owners Cost Revisions Associated with Delay</b>		
12	Owner's Labor Cost Revisions Associated with Delay	\$ 125,279
13	Owner's Risk Insurance and Workers Compensation Insurance	\$ 30,101
14	Additional Information Technology ("IT") Cost Associated with Delay	\$ 6,504
15	Facilities Cost Increases Associated with Delay	\$ 6,071
16	Other Owner's Cost Associated with Delay	\$ 46,351
17	<b>Total Owner's Cost Associated with Delay</b>	<b>\$ 214,307</b>
<b>Owner's Cost Increases Not Associated with Delay</b>		
18	Additional NND Staff	\$ 7,535
19	NRC Fees	\$ 7,094
20	Other IT Cost	\$ 3,309
21	Other Owner's Cost Not Associated with Delay	\$ 12,851
22	<b>Total Owner's Cost Not Associated with Delay</b>	<b>\$ 30,789</b>
<b>Total Base Project Cost (2007 \$)</b>		<b>\$ 698,233</b>
<b>Change in Project Escalation</b>		<b>\$ 332,042</b>
<b>Change in AFUDC</b>		<b>\$ 42,075</b>
<b>Gross Construction Cost (Current \$)</b>		<b>\$ 1,072,350</b>
Note: Totals may not add due to rounding		

1 **Q. WHAT IS THE EFFECT OF THESE PROPOSED MODIFICATIONS AND**  
2 **UPDATES?**

3 A. These modifications and updates increase the approved Total Base Project  
4 Cost for the Units in 2007 dollars from \$4.5 billion as approved in Order No.  
5 2012-884 to \$5.2 billion.<sup>1</sup> The effect of these modifications and updates on the  
6 nine cost categories recognized in the Commission's BLRA orders and the  
7 categories and subcategories of the previously described cost adjustments is  
8 reflected in Exhibit Nos. \_\_ (CLW-4) and \_\_ (CLW-5). As shown in Exhibit No.  
9 \_\_ (CLW-1), these modifications and updates, along with changes in escalation  
10 rates and AFUDC, increase the gross construction cost of the Units from \$5.8  
11 billion, as projected in the financial schedules that were approved in Order No.  
12 2012-884, to \$6.8 billion in current dollars.

13 I would note that these projections do not include any unidentified or un-  
14 itemized Owner's contingency funds. The current projections also reflect current  
15 forecasts of escalation impacts which the Company will update quarterly as  
16 required by Order No. 2009-104(A).

17 **Q. WHY IS THE CAPITAL COST OF THE PROJECT AFFECTED BY**  
18 **CHANGES IN THE ESCALATION RATES?**

19 A. As discussed by Company witnesses in Docket No. 2008-196-E and  
20 subsequent update proceedings, the cost for the project is broken down into nine

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<sup>1</sup> Unless otherwise specified, all cost figures in this testimony are stated in 2007 dollars and reflect SCE&G's share of the cost of the Units.

cost categories. Certain cost categories are escalated using the Handy-Whitman South Atlantic Region All Steam Generation Plant Index, All Steam & Nuclear Generation Plant Index, and Total Transmission Plant Index. The Commission recognized in Order No. 2009-104(A) that these inflation indices are well-recognized and commonly used in the utility industry to estimate the cost of constructing facilities and approved their use to determine the escalation amount relative to specific cost categories. In accordance with Order No. 2009-104(A), the Company updates these rates as required in its quarterly updates. Exhibit No. \_\_ (CLW-3) reflects the most current Handy-Whitman inflation indices available at the time the Company filed its Petition in this proceeding. These indices are referenced in the July 2014 update.

#### **I. UPDATED EPC CONTRACT COST**

**Q. PLEASE ITEMIZE THE UPDATE RELATED TO THE EPC CONTRACT.**

**A.** The Revised Cash Flow Forecast that Westinghouse Electric Company ("WEC") and Chicago Bridge and Iron ("CB&I," and together with WEC, "WEC/CB&I") provided to SCE&G indicates that the Estimated at Completion ("EAC") cost for the project has increased. The revisions to the EAC cost are in the EPC Contract categories of Target and Time and Materials cost. For these categories, WEC/CB&I invoices SCE&G for its actual cost plus contractually determined overhead and margins under the terms of the EPC Contract. However, the Company has recently informed WEC/CB&I that, under its interpretation of the EPC Contract, properly invoiced but disputed amounts are subject to partial

1 payment of 90% of properly invoiced amounts until such disputes have been  
2 resolved.

3 **Q. WHAT IS DRIVING THE MODIFICATIONS AND UPDATES TO THE**  
4 **EPC CONTRACT COST?**

5 A. As Mr. Byrne and Mr. Jones discuss in more detail, WEC/CB&I informed  
6 SCE&G that the substantial completion dates of Units 2 and 3 ("Substantial  
7 Completion Dates") will be delayed by 27 and 25 months, respectively from the  
8 currently approved schedule. As a result of the delay, WEC/CB&I revised its  
9 forecast of the EAC cost to reflect the additional labor and related cost that it  
10 contends SCE&G is obligated to pay and that it asserts are necessary to maintain  
11 the updated construction schedule. In addition, the forecast reflects the cost  
12 associated with reduced productivity and increased staffing ratios for the project.  
13 WEC also projects that the EAC cost will increase due to the cost associated with  
14 additional Time and Materials scopes of work that WEC forecasts will be  
15 necessary to staff the start-up of the Units and to provide for the processing of  
16 License Amendment Requests ("LARs") to support construction. The cost  
17 forecast also includes increased labor and non-labor costs for installing additional  
18 commodities required by design finalization changes.

19 SCE&G also negotiated change orders to the EPC Contract to address new  
20 and updated scopes of work that have been identified as necessary for the project.  
21 Further, SCE&G's share of the EPC Contract cost has been decreased to reflect a  
22 cost savings resulting from the reallocation of Switchyard cost between SCE&G

1 and Santee Cooper and to reflect the recovery of approximately \$86 million in  
2 liquidated damages payable under the EPC Contract as a result of the delay  
3 experienced in the project.

4 **Q. HAVE YOU DEVELOPED AN EXHIBIT DEMONSTRATING THE**  
5 **IMPACT OF EACH OF THESE ADJUSTMENTS?**

6 A. Yes. Exhibit No. \_\_ (CLW-5) shows how the updated EPC Contract cost is  
7 allocated among the EPC Contract cost categories. These changes represent a  
8 total cost adjustment of \$453.1 million, or approximately 65% of the total change  
9 in the capital cost schedule. See also Line 11 of Chart A.

10 **A. Delay and Other EAC Cost**

11 **Q. WHY WILL THE DELAY INCREASE THE FORECASTED AMOUNT OF**  
12 **LABOR AND RELATED COST NEEDED TO COMPLETE THE**  
13 **PROJECT?**

14 A. As discussed in more detail by Mr. Jones, WEC/CB&I projects that the  
15 delay in the construction schedule of the Units will require it to employ workers  
16 for longer than originally projected to accomplish previously-identified scopes of  
17 work. As a result, WEC/CB&I included in its cost forecast the additional labor  
18 cost associated with the extended employment of these workers.

19 **Q. DID WEC/CB&I REVISE THE COST FORECAST TO REFLECT**  
20 **DECREASED PRODUCTIVITY AND INCREASED STAFFING?**

21 A. Yes. Mr. Byrne and Mr. Jones explain that the productivity factors realized  
22 on the project to date are less favorable than those originally projected by

1 WEC/CB&I. In updating the EAC cost, WEC/CB&I took into account the  
2 decreased productivity experienced on the project and revised the forecasted  
3 productivity factors for the remainder of the project. These revised and less  
4 favorable productivity factors reflect that additional Direct Craft Labor will be  
5 required to accomplish previously-identified scopes of work and have the effect of  
6 increasing the project cost from those originally forecasted.

7 As part of the EAC cost forecast, WEC/CB&I also increased the ratio of  
8 Indirect Craft Labor to Direct Craft Labor and the ratio of Field Non-manual  
9 Labor to Direct Craft Labor for the project, and the cost associated with both  
10 categories of labor cost.

11 **Q. WHAT OTHER FACTORS AFFECT THE EAC COST FORECAST?**

12 A. WEC further estimates that additional Time and Materials scopes of work  
13 will be necessary to staff the start-up of the Units and to provide for the processing  
14 of LARs to support construction. Due to a number of design changes by  
15 WEC/CB&I, the number of LARs required during the construction process is  
16 greater than originally projected and WEC updated the EAC cost to reflect the  
17 additional cost resulting from these expanded scopes of work.

18 **Q. HOW DID WEC/CB&I DEVELOP THE UPDATED EAC COST**  
19 **FORECAST?**

20 A. The revised EAC cost forecast was developed by WEC/CB&I over a  
21 several month period in parallel with the development of the revised fully  
22 integrated project schedule. WEC/CB&I focused on identifying projected



1 modifications and updates in cost and then adding to, or subtracting from, the base  
2 cost estimate.

3 As part of this analysis, WEC/CB&I prepared cost estimates for remaining  
4 Target Price and Time and Materials scopes of work in the categories of Direct  
5 Craft Labor, Indirect Craft Labor, Subcontracts, Field Non-manual Labor, and  
6 Other Distributable cost. In particular, the cost estimates examined how these  
7 scopes of work were impacted by various identified changes including design of  
8 the units, material quantities, staffing requirements, craft productivity, schedule  
9 changes, statutory, and regulatory requirements. These estimates also were based  
10 on the trends experienced over the first years of the project, with an emphasis  
11 placed on the last two years, when the work shifted from mostly site preparation to  
12 mostly vertical construction. WEC/CB&I then combined the identified cost  
13 impacts with the current project budget to create a new EAC cost, which was  
14 provided to SCE&G in the third quarter of 2014.

15 **Q. WHAT STEPS DID SCE&G TAKE TO VERIFY WHETHER THE**  
16 **UPDATED EAC COST PROVIDED BY WEC/CB&I IS REASONABLE?**

17 **A.** Upon receipt of the updated EAC cost from WEC/CB&I, SCE&G  
18 assembled a review team consisting of personnel from its Construction and  
19 Business and Finance Departments of NND to conduct a detailed review of the  
20 updated EAC cost forecast. Over a period of approximately two months, this team  
21 reviewed the information provided and conducted a detailed review of the revised

1 forecasts. This effort focused on understanding the sources of the EAC cost and  
2 determining the reason for the cost impacts.

3 The method used to review the updated EAC cost forecast was a  
4 combination of requesting and reviewing back-up information from WEC/CB&I,  
5 interviewing WEC/CB&I team members, who provided oral responses to our cost-  
6 related interpretations, and having SCE&G subject matter experts review and  
7 analyze WEC/CB&I's forecasts. Where costs were based on commodity take-  
8 offs, WEC used the assumed direct and indirect labor factors as provided in the  
9 supporting documents. Where the estimate for certain cost elements were based  
10 on specific Field Non-manual staffing plans, SCE&G verified the cost estimate  
11 was supported by the staffing plan. SCE&G also convened a number of panels of  
12 experts in particular subject matter areas, such as testing or licensing, to review  
13 these aspects of the proposed cost. Through this intensive review process,  
14 SCE&G gathered information on the methodology used by WEC/CB&I to  
15 estimate the cost.

16 Through the discussions with the WEC/CB&I EAC team and based upon  
17 SCE&G's review and analysis of the information provided and representations  
18 made to the Company by WEC/CB&I, SCE&G approved for filing under the  
19 BLRA the EAC cost as a reasonable and prudent estimate of the Target Price and  
20 Time and Materials price for completion of the project. Notwithstanding this  
21 approval, the Company has not waived and has specifically reserved all of its  
22 rights under the EPC Contract and otherwise to assert that WEC/CB&I is

1 responsible for the delay and associated cost increases and are liable to SCE&G  
2 for all resulting costs and damages.

3 **Q. ARE THERE CATEGORIES WITHIN THE UPDATED COST FOR**  
4 **WHICH SCE&G IS RESPONSIBLE TO PAY?**

5 A. Yes. The review team separated the updated cost forecast into the general  
6 categories of (1) Change Orders; (2) EAC Entitled Quantity Increases; (3) EAC  
7 Delay Cost; (4) EAC Performance Factors; and (5) WEC Other, consisting of  
8 Time and Material and start-up cost. Of these, the review team concluded that the  
9 Company was only responsible for those cost increases resulting from Change  
10 Orders and Entitled Quantity Increases. The review team further concluded that  
11 SCE&G should dispute WEC/CB&I's contention that the Company is responsible  
12 for the cost increases resulting from the other categories.

13 **Q. WHY DOES SCE&G DISPUTE THE INCREASED COST CATEGORIES**  
14 **RELATED TO DELAY COST, PERFORMANCE FACTORS, AND WEC**  
15 **OTHER?**

16 A. As further discussed by Mr. Byrne and Mr. Jones, the cost increases in  
17 these categories are primarily attributable to the delay caused by the inability of  
18 the module fabrication facility in Lake Charles, Louisiana, to produce submodules  
19 for the project in a timely fashion. WEC/CB&I also has not met the overall  
20 productivity factors on which its original cost estimates were based and has  
21 increased its labor productivity factors resulting in increased Direct Craft Labor  
22 cost for the Project. Design changes by WEC also have increased the anticipated

1 number of LARs required during the construction process, and WEC projects that  
2 additional licensing support will be necessary to process these LARs. Finally,  
3 WEC has proposed to increase the ratio of Indirect Craft Labor to Direct Craft  
4 Labor and the ratio of Field Non-manual Labor to Direct Craft Labor. SCE&G  
5 asserts that WEC/CB&I is contractually responsible for these issues and the  
6 resulting increases in the Delay and Other EAC cost. WEC/CB&I has not  
7 accepted responsibility for any part of the Company's claim and, as further  
8 discussed by Mr. Byrne, the parties are in negotiations concerning the obligations  
9 to pay for this increased cost.

10 **Q. IF SCE&G DISPUTES THAT IT IS OBLIGATED TO PAY FOR THIS**  
11 **ADDITIONAL COST, WHY IS IT SEEKING COMMISSION APPROVAL**  
12 **OF THE UPDATED SCHEDULES AT THIS TIME?**

13 **A.** SCE&G contends that it is not required to pay for this increased cost and  
14 intends to dispute properly invoiced amounts that reflect additional cost resulting  
15 from the delay. However, WEC/CB&I has taken the position that this increased  
16 cost is recoverable under the EPC Contract and that it has the right to cease work  
17 and treat the project as if it had been suspended at SCE&G's request, if properly  
18 invoiced amounts are not paid by the Company. Under these circumstances, the  
19 project could be delayed indefinitely while SCE&G and WEC/CB&I attempted to  
20 resolve the dispute through negotiation or litigation. Further delays likely would  
21 substantially increase the final cost of the Units due to increased escalation cost  
22 and carrying cost on the amounts spent to date. Moreover, SCE&G will be

1 eligible for \$2.2 billion in Federal Production Tax Credits if the Units are in  
2 commercial service by December 31, 2020. When earned, these tax credits will  
3 result in a positive benefit for our customers through reduced total rates. Further  
4 delaying the Units, and in particular Unit 3, could imperil SCE&G's ability to  
5 claim these credits.

6 SCE&G does not currently believe that refusing to make any payment on  
7 properly invoiced amounts is reasonable or prudent. WEC/CB&I contends that in  
8 such cases, the terms of the EPC Agreement require payment of 90% of a disputed  
9 invoice. In order to protect SCE&G's position without further delaying  
10 construction of the Units, the Company has advised WEC/CB&I that it will pay  
11 90% of the properly invoiced disputed amounts, reserving its rights to contend that  
12 no such payments are in fact due and to pursue claims for disputed sums. This  
13 process will enable the project to continue while SCE&G and WEC/CB&I attempt  
14 to negotiate or otherwise reach a resolution of these issues.

15 **Q. IF SCE&G ULTIMATELY IS SUCCESSFUL IN DISPUTING THESE**  
16 **CHARGES, HOW WILL IT ACCOUNT FOR THE PAYMENTS MADE TO**  
17 **WEC/CB&I?**

18 **A.** Customers will receive the full benefit of any resolution of these disputed  
19 amounts. The EPC Contract provides that SCE&G has the right to recoup any  
20 payments made on disputed amounts if the dispute is resolved in SCE&G's favor.  
21 Any amounts paid to WEC/CB&I that are recovered by SCE&G through  
22 negotiation or litigation will reduce the capital cost of the project on a permanent

1 basis. During the construction period, those amounts would reduce the financing  
2 cost to be charged to customers. As a result, any reduction will result in lower  
3 revised rates requested in future revised rates proceedings.

4 **Q. IS SCE&G PROPOSING ANY OTHER ADJUSTMENTS TO THE**  
5 **UPDATED COST RESULTING FROM THE DELAY?**

6 A. Yes. Article 13 of the approved EPC Contract specifies that WEC/CB&I  
7 will be responsible for liquidated damages if there is a delay in the Substantial  
8 Completion Date for either unit. Because of the delay experienced in the project  
9 to date, SCE&G is confident that it will recover from WEC/CB&I the full amount  
10 of liquidated damages payable under the EPC Contract, which totals  
11 approximately \$86 million (see Line No. 6 of Chart A). The Company has netted  
12 this amount against the Delay and Other EAC cost for purposes of this filing.

13 **Q. BASED ON SCE&G'S PROPOSED ADJUSTMENTS, WHAT IS THE**  
14 **TOTAL INCREASE TO THE EPC COST CAUSED BY THE DELAY AND**  
15 **OTHER EAC COST IN THE PROJECT?**

16 A. After adjusting WEC/CB&I's updated forecast to reflect SCE&G's  
17 intention to pay only 90% of properly invoiced disputed amounts, the Company  
18 projects that the delay and other EAC cost will result in additional EAC cost of  
19 approximately \$411 million (see Line No. 5 of Chart A). SCE&G has further  
20 adjusted this amount to reflect its anticipated recovery of the approximately \$86  
21 million in liquidated damages (see Line No. 6 of Chart A). The combined effect  
22 of these adjustments reflects increased EPC Contract cost of approximately \$325



1 million (see Line No. 7 of Chart A), or 47% of the total change in the capital cost  
2 schedule.

3 **B. Changes to the EAC Cost Due to Design Finalization**

4 **Q. WHAT ARE THE MODIFICATIONS AND UPDATES RELATED TO**  
5 **CHANGES IN THE DESIGN FINALIZATION OF THE PROJECT?**

6 A. As previously mentioned, WEC/CB&I continues to finalize the issued-for  
7 construction design documents for the project and update its projections of the  
8 amount of commodities that must be installed to complete the project. Under the  
9 Fixed and Firm pricing components of the EPC Contract, WEC/CB&I is  
10 responsible for the cost of the additional commodities themselves. These  
11 commodities include concrete, structural steel, re-bar, electrical cable, pipe, and  
12 other construction materials identified in the design finalization process.  
13 However, SCE&G is responsible for the Actual Craft Wages and Non-Labor Cost  
14 associated with performing the work of installing these additional commodities.  
15 As well, this cost includes the impact of additional labor cost resulting from the  
16 implementation of design changes in the Containment Vessel.

17 **Q. HOW WILL THIS ADDITIONAL COST BE DETERMINED?**

18 A. As the detailed final design of the standard plant is completed, detailed  
19 quantity "take offs" are prepared for ordering materials and developing work  
20 package instructions. The new quantities are compared to original estimated  
21 quantities which were based on prior design information. Any differences  
22 between the original estimate and new quantities will result in cost impacts when

1 compared to the original estimate. The Direct Craft Labor cost for installing the  
2 material is included in the EPC Contract Target price and is billed to SCE&G.

3 **Q. DID SCE&G DETERMINE WHETHER WEC/CB&I'S REVISED**  
4 **ESTIMATE WAS REASONABLE?**

5 A. Yes. The review team analyzed this increased cost as part of the process I  
6 previously described and approved for filing under the BLRA this EAC cost as a  
7 reasonable and prudent estimate of the Target price and Time and Materials price  
8 for completion of the project. However, the Company has not waived and has  
9 specifically reserved all of its rights under the EPC Contract and otherwise.

10 **Q. WHAT EFFECT WILL THE UPDATED PROJECTIONS RELATED TO**  
11 **DESIGN FINALIZATION HAVE ON THE EAC COST?**

12 A. As a result of the continuing efforts to finalize the design, SCE&G has  
13 determined that EAC cost will increase by approximately \$72 million (see Line  
14 No. 8 of Chart A), or approximately 10% of the total change in the capital cost  
15 schedule.

16 **C. Changes in EPC Cost Due to Change Orders**

17 **Q. PLEASE EXPLAIN THE COST MODIFICATIONS AND UPDATES**  
18 **RELATED TO THE CHANGE ORDERS.**

19 A. SCE&G has identified 10 change orders and related matters under the EPC  
20 Contract that will result in cost modifications. These change orders result in a  
21 total modification and update to the EPC Contract cost of \$56.5 million (see Line  
22 No. 9 of Chart A), or approximately 8% of the total request. Mr. Jones testifies in

1 greater detail as to the reasonableness and prudence of the cost reflected in these  
2 change orders.

3 **D. Switchyard Cost Re-Allocation**

4 **Q. PLEASE EXPLAIN THE MODIFICATIONS AND UPDATES TO THE**  
5 **ALLOCATION OF SWITCHYARD COST.**

6 A. As I testified in Docket No. 2010-376-E, SCE&G originally projected that  
7 the Units' joint-owner, Santee Cooper, would pay a 45% share of the EPC  
8 Contract cost associated with the entire scope of work for the Units 2 and 3  
9 Switchyard. Subsequently, the parties determined that some of the cost included  
10 in that scope of work benefited one party to the project more than the project in  
11 general related to how the Switchyard supports construction of new transmission  
12 lines for each company's transmission system. SCE&G and Santee Cooper agreed  
13 to conduct a comprehensive review of the Switchyard design and to modify and  
14 update the allocation amount in order to allocate these transmission assets based  
15 on how intensively each party would use these assets. In Order No. 2011-345, the  
16 Commission approved a projection of the impact of the revised allocation,  
17 including estimated de-escalation rates. These engineering studies were recently  
18 completed and SCE&G and Santee Cooper have determined the actual amount of  
19 cost to be allocated based upon their respective use of the facilities. As a result,  
20 SCE&G has modified and updated the initial projections to reflect the current cost  
21 projections and each party's actual use of the Switchyard by decreasing the  
22 allocation of Switchyard cost to SCE&G by \$107,000 as reflected on Line 10 of

1 Chart A. This revision also assigns the cost to the proper BLRA category in which  
2 they were paid.

3 **II. OWNER'S COST REVISIONS ASSOCIATED WITH DELAY**

4 **Q. PLEASE EXPLAIN ITEMS 12 THROUGH 16 SHOWN ON CHART A**  
5 **RELATED TO OWNER'S COST REVISIONS ASSOCIATED WITH**  
6 **DELAY.**

7 A. Line Nos. 12-16 on Chart A show the modifications and updates to  
8 Owner's cost forecasts as a result of the effect of the new WEC/CB&I revised  
9 Substantial Completion Dates. The Exhibit shows that the total amount of  
10 Owner's cost modifications and updates associated with the delay is \$214.3  
11 million (see Line No. 17 of Chart A), or approximately 31% of the total request.

12 **Q. AS A MATTER OF BACKGROUND, WHAT TYPES OF EXPENSES ARE**  
13 **INCLUDED IN OWNER'S COST?**

14 A. Owner's cost includes the cost SCE&G will incur related to overseeing the  
15 construction project; recruiting, hiring and training staff for the Units; quality  
16 assurance and quality control; IT cost; preparing written operating procedures for  
17 all aspects of Unit operations, maintenance, safety and security; accepting, testing  
18 and maintaining the systems and components of the Units as they are completed  
19 and turned over to SCE&G pending completion of each Unit as a whole; obtaining  
20 licenses and permits for the project; regulatory cost such as NRC fees; start-up  
21 testing of the Units as they are completed; and providing the materials and  
22 supplies needed for maintenance of plant systems up to the date of commercial

1 operations. Owner's cost also includes a number of construction-related items  
2 such as workers' compensation insurance for all contractors and subcontractors,  
3 builder's risk insurance, and transportation risk insurance; payment of  
4 miscellaneous taxes including sales taxes; and certain preconstruction cost.

5 **Q. PLEASE EXPLAIN WHY SCE&G IS PROPOSING TO MODIFY AND**  
6 **UPDATE THE OWNER'S COST FORECASTS IN THIS PROCEEDING.**

7 A. SCE&G has determined that it will incur additional cost related to the  
8 delay. SCE&G also has continued to review, refine, modify, and update the  
9 Owner's cost projections. SCE&G has carefully done so based on operating  
10 experience with the project, and ongoing analyses of the personnel and facilities  
11 needed to safely and efficiently construct and operate the Units. As a result,  
12 SCE&G has modified and updated the projections of Owner's cost as shown in  
13 Exhibit No. \_\_ (CLW-6) representing the increased delay and non-delay cost for  
14 the NND and non-NND cost centers organized by functional area that SCE&G  
15 anticipates will charge cost to the project. These modified and updated Owner's  
16 cost projections are also shown in Exhibit No. \_\_ (CLW-7) reflecting the labor and  
17 non-labor cost increases for the NND and non-NND cost centers. These Exhibits  
18 reflect a cost-center by cost-center analysis of the effect of WEC/CB&I's revised  
19 Substantial Completion Dates for the Units and SCE&G's actual experience in  
20 managing this project since 2008.

1 **Q. HOW DID SCE&G PREPARE THE OWNER'S COST BUDGET?**

2 **A.** SCE&G developed the Owner's Cost forecast at a 100% level, inclusive of  
3 Santee Cooper's percentage to support the day-to-day management of the project,  
4 and then identified its share of Owner's Cost. The Company also identified the  
5 cost that is not shared with Santee Cooper in developing the budget reported for  
6 purposes of the BLRA. At the department level, SCE&G created budgets for all  
7 cost centers that provide support for the construction and future operation of the  
8 Units. These budgets were broken down by month for the current year and  
9 annually thereafter until the end of the project and were established at the resource  
10 code level, which is SCE&G's accounting code that identifies the nature of the  
11 cost.

12 Mr. Jones testifies to the process by which the NND staffing budgets have  
13 been updated since 2012 in order to develop the budgets presented in this  
14 proceeding. I support his conclusions and am sponsoring the revisions to the other  
15 aspects of Owner's cost which are set forth on the modified and updated budget as  
16 shown in Exhibit No. \_\_ (CLW-6). These changes are based on the annual, cost-  
17 center by cost-center review of the budget for the project, which is described in  
18 my testimony in Docket Nos. 2010-376-E and 2012-203-E.

19 **Q. IN PREPARING THE CURRENT OWNER'S COST BUDGET, HOW DID**  
20 **YOU OBTAIN BUDGET INFORMATION FROM AREAS OTHER THAN**  
21 **NND?**



1     **A.**           As indicated in prior testimony, SCE&G requires all cost centers outside of  
2     NND to assign time and cost directly to the project based on time sheets and  
3     invoices for actual work performed. These cost centers include such groups as  
4     SCANA Audit Services, Legal, Environmental, Risk Management and Insurance,  
5     Facilities Management, and multiple groups within current Nuclear Operations  
6     such as Unit 1 Health Physics that may assist on an as-needed basis in creating  
7     staffing plans and writing operating procedures for parts of Unit 2 and 3  
8     operations.

9           All cost centers that anticipate providing direct support to the project must  
10    provide detailed budgets for their activities through June 2020 and update the  
11    budgets annually. These budgets are typically based on a review of the past  
12    amount of assistance provided by the outside group to NND adjusted to reflect any  
13    anomalies and to take into account an estimate of how needs for assistance are  
14    likely to evolve in the future. My group then carefully reviews these budgets  
15    against past actual experience and our understanding of the future needs of the  
16    project. We seek adjustments to them where we disagree with the assumptions or  
17    results. Bear in mind, these are budgets and we review what is charged to ensure  
18    that nothing is billed to the project except the cost of necessary assistance actually  
19    provided. However, we are also vigilant to ensure that these non-NND cost center  
20    cost forecasts are reasonable and necessary in all respects.

21           We are equally vigilant as to actual cost billed to the project. The NND  
22    teams review these charges each month to ensure that they are accurate, necessary

1 and appropriate. Our joint-owner, Santee Cooper, has an equal interest in making  
2 sure that all charges are appropriate and reviews these charges independently on a  
3 monthly basis.

4 As to the budgets being presented here, I have reviewed them in detail and  
5 am very familiar with them through my role in the internal review and approval  
6 process and the financial administration of the project month to month. It is my  
7 conclusion that they reflect reasonable, necessary, and prudent project cost based  
8 upon the information currently available to SCE&G.

9 **Q. WHAT STEPS DOES THE COMPANY TAKE TO ENSURE THAT NO**  
10 **COST RELATED TO THE OPERATION OF UNIT 1 IS BILLED TO THE**  
11 **PROJECT?**

12 A. In some instances, Unit 1 employees who have specific expertise spend  
13 time on the project, and the Company records the associated labor cost as a direct  
14 cost related to the construction of Units 2 and 3. As well, some cost may be  
15 shared between the Units in order to increase efficiencies and economies of scale,  
16 with the cost being allocated to each Unit based upon their derived benefit from  
17 the expenses. In all other instances, SCE&G separately accounts for the cost to  
18 operate Unit 1 and ensures that this cost is not recorded as a cost of the project.

19 **Q. WHAT IS THE BACK-UP MATERIAL FOR THIS BUDGET?**

20 A. In the backup material for Exhibit Nos. \_\_ (CLW-6) and \_\_ (CLW-7), the  
21 cost is broken down by summary resource codes for each of the 100 NND and  
22 non-NND cost centers that underlie the summary NND budget documents. For

1 each of the entries in that budget, there is a separate set of schedules that breaks  
2 this summarized cost down month-by-month from project inception to date and  
3 year-by-year for the period of 2015 to 2020. Each cost center manager has  
4 developed a budget based on his or her professional assessment of the future needs  
5 of the project and experience. These budgets are supported by staffing and  
6 training plans, current corporate salary structures, outside services budgets, and  
7 other cost center specific budget documents as available. These detailed cost  
8 center budgets roll up and support the overall budget set forth here.

9 **Q. WHO CAN REVIEW THIS BACK-UP INFORMATION SUPPORTING**  
10 **THE CURRENT BUDGET?**

11 A. SCE&G is making the above-mentioned detailed cost center budgets and  
12 supporting documentation information available to the South Carolina Office of  
13 Regulatory Staff. Because of the commercially sensitive nature of much of this  
14 information, and because in some cases this information contains data about  
15 individual employees' salaries, the Company is asking parties to sign  
16 confidentiality agreements if they wish to inspect and review this data at the  
17 construction site.

18 **A. Owner's Labor Cost Revisions Associated with Delay**

19 **Q. WHAT IMPACT HAS THE DELAY HAD ON OWNER'S LABOR COST?**

20 A. In his testimony, Mr. Jones discusses the impact of the delay on the  
21 Owner's labor cost relating to the responsibilities of the NND team. These  
22 responsibilities include SCE&G's obligations to oversee construction,

1 engineering, and quality assurance/quality control ("QA/QC") both on site and at  
2 suppliers' locations worldwide; train and license all personnel required for Unit  
3 operations; audit invoices from WEC/CB&I and other suppliers and resolve  
4 contractual and payment disputes with WEC/CB&I; and oversee and account for  
5 all commercial aspects of the project and operate and maintain the Units when in  
6 service. He also testifies to the reasonableness and prudence of these revised  
7 plans and the resulting adjustments to the cost forecasts for the project. These  
8 modified and updated plans and forecasts reflect that the delay will increase the  
9 Owner's labor cost by approximately \$125.3 million (see Line No. 12 of Chart A),  
10 or approximately 18% of the total request in this proceeding. I am familiar with  
11 these plans and cost forecasts and support his conclusion that this is a prudent and  
12 reasonable cost of the project.

13 **B. Owner's Risk Insurance and Workers' Compensation Insurance**

14 **Q. PLEASE EXPLAIN THE COST DRIVERS FOR THE INCREASE IN**  
15 **OWNER'S RISK INSURANCE AND WORKERS' COMPENSATION**  
16 **INSURANCE COST.**

17 **A.** All of the Project insurance programs are required in Phase II of the EPC.  
18 These insurance programs include Builder's Risk insurance, an owner controlled  
19 insurance program ("OCIP"), and Cargo insurance. The existing insurance  
20 programs were negotiated and bound utilizing the original construction timeline,  
21 including the 18-month contingency period allowed under the BLRA. All of the  
22 project insurance policies will expire prior to the revised project completion date.

1 This will require the Owner to either seek an extension of the current policies,  
2 pending current insurer agreement, or return to the insurance marketplace for  
3 search and procurement of new insurance coverage. The Owner is having on-  
4 going discussions with all of the project insurers about extending the current  
5 policy terms and while insurers continue to be receptive, they are unable to  
6 commit to an extension at this time. Furthermore, the delay results in additional  
7 exposure to Builder's Risk damage claims as well as worker injuries and the  
8 workers' compensation claims to provide medical care for these workers. SCE&G  
9 forecasts that extending the project will result in an increase in Owner's cost of  
10 approximately \$30.1 million (see Line No. 13 of Chart A), or approximately 4.3%  
11 of the total change in the capital cost schedule.

12 **Q. WHAT STEPS HAS SCE&G TAKEN TO MINIMIZE THESE COST**  
13 **INCREASES?**

14 **A.** The Owner has worked diligently with WEC/CB&I and the project insurers  
15 to manage the insurance programs as efficiently as possible to maximize value and  
16 minimize risk for the project stakeholders. Since the insurance program inception,  
17 the project has never been rated below "Excellent" by the insurer Loss Control  
18 team. The project continues to strive to provide a safe work environment for the  
19 workers and this increased focus on worker safety has resulted in fewer than  
20 projected workers' compensation claims. This better than projected claim  
21 experience to date has resulted in a reduction in the program collateral

1 requirements at each successive year's renewal. If this positive claims experience  
2 continues, SCE&G believes this will result in an extension of the existing policy.

3 **C. Additional IT Cost Associated with Delay**

4 **Q. WHAT ADDITIONAL INFORMATION TECHNOLOGY COST IS**  
5 **ASSOCIATED WITH THE DELAY?**

6 A. SCE&G forecasts that extending the schedule of the project will increase  
7 the Owner's cost associated with providing IT infrastructure, including licenses,  
8 hardware, and software cost. The effect of this adjustment increases the Owner's  
9 cost by approximately \$6.5 million (see Line No. 14 of Chart A), or approximately  
10 1% of the total request.

11 **Q. WHAT IS THE BASIS FOR THIS ADDITIONAL COST?**

12 A. As further discussed by Mr. Jones, SCE&G is obligated to supply certain  
13 software and other IT resources required to support operational readiness and the  
14 work of the NND team during the construction. Extending the project schedule  
15 will increase the cost of IT support for the project because software licenses and  
16 maintenance fees, equipment maintenance cost, and other IT support cost must be  
17 paid for longer periods of time.

18 **Q. WHAT PROCESS DID THE COMPANY USE TO FORECAST THIS**  
19 **ADDITIONAL COST?**

20 A. SCE&G forecasted the additional IT cost resulting from the delay by  
21 identifying the difference in cost that will occur between the previously approved  
22 commercial operation dates and the newly proposed commercial operation dates.



1 Included in this additional cost includes software and equipment maintenance,  
2 software upgrades and IT support cost. Software and equipment maintenance cost  
3 classified as IT cost resulting from the delay were forecasted based on an  
4 extension of the yearly maintenance contracts associated with those pieces of  
5 software/equipment. Software upgrades classified as IT cost resulting from the  
6 delay were forecasted based on known required yearly updates to software that  
7 will be needed during that time frame. IT support cost classified as IT cost  
8 resulting from the delay were forecasted based on the IT level of support/oversight  
9 of software programs needed during that time frame.

10 **D. Facilities Cost Increases Associated with Delay**

11 **Q. PLEASE EXPLAIN HOW THE DELAY HAS AFFECTED OWNER'S**  
12 **COST RELATED TO FACILITIES.**

13 **A.** Pursuant to the terms of the approved EPC Contract, SCE&G is responsible  
14 for the warehouse and storage space for materials and equipment necessary to  
15 operate the Units. The Company also is required to pay for the office space and  
16 related support facilities for its NND team personnel while they are on site.  
17 Because of the delay in the project schedule, it will be necessary for the  
18 construction and operational readiness teams to perform certain scopes of work  
19 simultaneously. Therefore, additional facilities will be required to provide the  
20 teams with sufficient space to complete their respective scopes of work. In  
21 addition, the maintenance, upkeep, and other costs of office space and related  
22 support facilities will have to be borne by the project for a longer period of time.

1 Due to the delay in the Substantial Completion Dates, SCE&G forecasts that  
2 additional facilities and facilities cost will increase Owner's cost by \$6.1 million  
3 (see Line No. 15 of Chart A), or approximately 1% of the total change in the  
4 capital cost schedule.

5 **E. Other Owner's Cost Associated with Delay**

6 **Q. WHAT OTHER OWNER'S COST WILL BE AFFECTED BY THE**  
7 **DELAY?**

8 A. Extending the duration of the project also will increase Owner's cost across  
9 a broad range of cost centers related to technical, administrative, and other support  
10 for the project as well as increasing non-labor cost associated with NND cost  
11 centers. For example, the delay will increase the labor cost for Construction  
12 Oversight Contractors; the amount of sales tax paid to the South Carolina  
13 Department of Revenue; and fees paid to the Institute of Nuclear Power  
14 Operations and the AP 1000 Users Group ("APOG"). These cost centers also  
15 include SCANA and SCE&G's direct costs in supporting the project for such  
16 services as Licensing, Construction, Engineering, and Maintenance. The basis for  
17 this adjustment and process used by the Company to develop and determine the  
18 increased cost are the same as I have previously described.

19 **Q. WHAT IS THE EFFECT OF THESE INCREASES?**

20 A. The cumulative effect of these increases is forecasted to total \$46.4 million  
21 (see Line No. 16 of Chart A), or approximately 7% of the total change in the  
22 capital cost schedule.

**III. OWNER'S COST REVISIONS NOT ASSOCIATED WITH DELAY**

**A. Additional NND Staff**

**Q. PLEASE EXPLAIN LINE NO. 18 OF CHART A RELATED TO THE ADDITION OF NND STAFF.**

**A.** Line No. 18 of Chart A reflects the addition of approximately 64 employees to the Company's NND staff. Mr. Jones testifies to the reasonableness and prudence of this change, which will increase Owner's cost by approximately \$7.5 million, or approximately 1% of the total request in this proceeding. I am familiar with this change from an accounting and financial standpoint and support as reasonable and prudent the revised forecast to reflect these additional staffing needs.

**B. NRC Fees**

**Q. HAS THERE BEEN ANY MODIFICATION OR UPDATE TO THE ESTIMATED NRC FEES ASSOCIATED WITH THE PROJECT?**

**A.** Yes. The NRC has revised its estimate of the fees that SCE&G must pay for NRC inspection and oversight of the project. The new estimate includes additional expenses for pre-inspection preparation and off-site work following up on inspections.

**Q. WHAT IS THE BASIS FOR THIS REVISED ESTIMATE OF NRC FEES?**

**A.** The NRC is statutorily required to recover most of its budget authority through fees assessed to applicants for an NRC license and to holders of NRC licenses. Among other things, these fees are assessed to recover the full cost of

1 reviewing applications and amendments for new licenses and approvals,  
2 preapplication consultations and reviews, and project managers and resident  
3 inspectors assigned to a specific plant or facility.

4 Initially, the NRC provided an estimate of its fees for the project, which  
5 was approved by the Commission in Docket No. 2008-196-E. Recently, however,  
6 the NRC informed SCE&G that the original estimate of fees only included its cost  
7 for NRC personnel located on the project site and did not include the cost  
8 associated with its staff members tasked with overseeing the project but who are  
9 located off-site. As a result, the new NRC fee estimate will increase Owner's cost  
10 for the project by \$7.1 million (see Line No. 19 of Chart A), or approximately 1%  
11 of the total request in this proceeding.

12 **C. Other IT Cost**

13 **Q. PLEASE EXPLAIN HOW THE COST CATEGORY FOR OTHER "IT**  
14 **COST" AFFECTS THE OWNER'S COST FORECAST.**

15 **A.** SCE&G has identified additional software and other IT resources, not  
16 related to the delay, that are a necessary cost of the project. Included in these IT  
17 resources are additional cyber security resources for NND project personnel,  
18 fatigue and stress modeling software to diagnose and monitor the condition of  
19 equipment in the Units, and additional software to capture and monitor plant  
20 operating data.

1 **Q. WHAT STEPS HAS SCE&G TAKEN TO MITIGATE OR AVOID**  
2 **ADDITIONAL IT COST?**

3 **A. SCE&G has exercised care and diligence to mitigate or avoid additional**  
4 **cost by negotiating long term agreements (3-5 years) to avoid the normal annual**  
5 **increases for many fixed maintenance fee contracts. Also, the Company is using**  
6 **the same software as Unit 1 where Unit 1 has a site license, ensuring that the cost**  
7 **is allocated to the appropriate cost center and that there is no subsidization of cost**  
8 **between Unit 1 operations and the project. This not only decreases license fees,**  
9 **but also allows us to leverage existing in-house knowledge and experience for the**  
10 **project. Similarly, SCE&G is standardizing software across all three units to**  
11 **minimize maintenance and implementation cost, wherever possible. The**  
12 **Company further established a uniform Request for Proposal and Request for**  
13 **Quote process for software purchases for all three units. This enables SCE&G to**  
14 **consider the requirements of all three units in making any procurement and**  
15 **obtaining the best possible price. When doing so creates cost advantages, SCE&G**  
16 **also is developing in-house software. Finally, SCE&G is delaying the hiring or**  
17 **assignment of people to ensure alignment with software implementations.**

18 **In spite of these efforts, SCE&G has determined through the same**  
19 **budgeting process I previously described that additional IT cost is prudent and**  
20 **necessary. The Company forecasts that the additional IT cost will add \$3.3**  
21 **million to Owner's cost (see Line No. 20 of Chart A), or approximately 0.5% of**  
22 **the total change in the capital cost schedule.**

**D. Other Owner's Cost Not Associated with Delay**

**Q. PLEASE EXPLAIN THE COST INCLUDED IN THE CATEGORY "OTHER OWNER'S COST NOT ASSOCIATED WITH DELAY"?**

**A.** SCE&G's forecast of Owner's cost has also increased in other areas including increased facilities cost; the cost of additional contractors for oversight of construction and component fabrication; increased fees for participation in APOG; increased cost for updating Probabilistic Risk Assessments related to the Units; the cost of maintenance equipment needed to support the project during systems testing and when in operation; and other similar types of costs. As part of the process of developing the Owner's cost forecast, SCE&G has determined that the amount of other Owner's cost not associated with the delay is \$12.9 million (see Line No. 21 of Chart A), or approximately 2% of the total request.

**CONCLUSION**

**Q. ARE THE UPDATES REQUESTED IN THIS PROCEEDING REASONABLE AND PRUDENT?**

**A.** Yes they are. I have been involved in a number of proceedings before the Commission where I have provided expert testimony on budgetary and forecasting matters. In my professional opinion, the modifications and updates to capital costs requested in this proceeding are the result of the normal and expected evolution of project cost forecasts and the current status of the construction schedule. Based upon my training, experience, and analysis, these modifications and updates, are



1 based upon reasonable and prudent forecasts and support updating the capital cost  
2 schedule under the provisions of the BLRA.

3 **Q. WHAT IS SCE&G REQUESTING OF THE COMMISSION IN THIS**  
4 **PROCEEDING?**

5 A. The Company is requesting that the Commission approve, pursuant to S.C.  
6 Code Ann. § 58-33-270(E), (1) the updated milestones as set forth in Mr. Byrne's  
7 testimony and Exhibit No. \_\_ (SAB-2) and (2) the modified and updated capital  
8 cost schedule in Exhibit No. \_\_ (CLW-1) as the approved schedule of capital cost  
9 for completion of the Units, subject to adjustment for escalation and net of  
10 AFUDC as provided for in Order No. 2009-104(A).

11 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

12 A. Yes, it does.

**RESTATED and UPDATED CONSTRUCTION EXPENDITURES**  
(Thousands of \$)

**V.C. Summer Units 2 and 3 - Summary of SCE&G Capital Cost Components**

Actual through December 2014\* plus  
Projected

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Total</b>														
Plant Cost Categories														
Fixed with No Adjustment	-	28	724	927	11,904	51,677	58,593	47,207	84,578	84,794	30,314	710	-	-
Firm with Fixed Adjustment A	21,723	97,388	319,073	374,810	314,977	488,461	448,947	422,076	742,980	759,311	658,948	389,817	169,040	38,289
Firm with Fixed Adjustment B	-	3,519	20,930	23,741	34,084	74,485	88,822	89,880	198,694	247,926	240,312	151,548	82,070	38,065
Firm with Indexed Adjustment	21,723	100,905	340,003	398,551	349,061	562,946	537,568	511,956	939,674	1,007,237	899,260	541,385	292,510	74,354
Actual Craft Wages														
Non-Labor Costs														
Time & Materials														
Owners Costs														
Transmission Costs														
<b>Total Base Project Costs(2007 \$)</b>														
	329,512	21,723	97,388	319,073	374,810	314,977	488,461	422,076	742,980	759,311	658,948	389,817	169,040	38,289
<b>Total Project Escalation</b>														
	-	3,519	20,930	23,741	34,084	74,485	88,822	89,880	198,694	247,926	240,312	151,548	82,070	38,065
<b>Total Revised Project Cash Flow</b>														
	21,723	100,905	340,003	398,551	349,061	562,946	537,568	511,956	939,674	1,007,237	899,260	541,385	292,510	74,354
<b>Cumulative Project Cash Flow(Revised)</b>														
	21,723	122,628	462,632	861,183	1,210,244	1,773,190	2,310,758	2,822,725	3,762,398	4,769,635	5,668,895	6,210,280	6,472,770	6,547,124
<b>AFUDC(Capitalized Interest)</b>														
	279,790	645	3,497	10,564	17,150	18,941	27,722	28,131	30,522	44,426	30,584	30,984	11,529	3,596
<b>Gross Construction</b>														
	6,826,914	22,368	104,403	350,567	415,701	363,278	581,886	538,097	970,176	1,051,853	938,143	572,349	274,039	77,953
<b>Construction Work In Progress</b>														
	22,368	128,771	477,338	883,039	1,256,317	1,838,203	2,403,405	2,941,591	3,911,767	4,983,430	5,802,573	6,474,923	6,748,982	6,828,914

\*Applicable index escalation rates for 2014 are estimated. Escalation is subject to restatement when actual indices for 2014 are final.

Notes:

Current Period AFUDC rate applied

5.68%

Escalation rates vary from reporting period to reporting period according to the terms of Commission Order 2008-104(A). These projections reflect current escalation rates. Future changes in escalation rates could substantially change these projections. The AFUDC rate applied is the current SCE&G rate. AFUDC rates can vary with changes in market interest rates, SCE&G's embedded cost of capital, capitalization ratios, construction work in process, and SCE&G's short-term debt outstanding.

Exhibit No. \_\_ (CLW-2)

Change from SCPSC Order 2012-884

(Thousands of \$)

## V.C. Summer Units 2 and 3 - Summary of SCE&amp;G Capital Cost Components

Actual through December  
2014\* plus Projected

Plant Cost Categories	Total	Actual								Projected					
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fixed with No Adjustment	(85,360)	-	-	-	-	-	(14,226)	(23,624)	(12,485)	20,084	20,823	9,558	56	(42,763)	(42,763)
Firm with Fixed Adjustment A	-	-	-	-	-	-	12,825	(12,825)	-	-	-	-	-	-	-
Firm with Fixed Adjustment B	52,971	-	-	-	-	-	(1,580)	(15,028)	(31,967)	20,877	25,935	7,721	22,137	19,537	5,339
Firm with Indexed Adjustment	17,998	-	-	-	-	-	(90,039)	(172,221)	(109,489)	84,058	124,878	82,624	19,196	51,832	28,842
Actual Craft Wages	198,628	-	-	-	-	-	(18,028)	(38,621)	(71,553)	(18,150)	71,542	156,910	94,873	22,652	-
Non-Labor Costs	288,327	-	-	-	-	-	16,149	(24,678)	(61,982)	(8,616)	91,813	157,787	94,851	22,781	223
Time & Materials	(19,425)	-	-	-	-	-	(848)	(18,941)	(30,076)	(10,297)	11,288	16,393	8,535	2,384	136
Owners Costs	245,096	-	-	-	-	-	(23,042)	(27,458)	(42,485)	21,164	26,430	55,879	92,679	93,417	48,512
Transmission Costs	-	-	-	-	-	-	(5,529)	(310)	(10,301)	(13,414)	67	28,777	710	-	-
Total Base Project Costs(2007 \$)	698,233	-	-	-	-	-	(125,217)	(331,806)	(370,318)	95,685	372,774	515,949	333,037	169,840	38,289
Total Project Escalation	332,042	-	-	-	-	-	(25,145)	(80,804)	(125,285)	12,708	113,112	181,903	126,818	92,870	38,065
Total Revised Project Cash Flow	1,030,275	-	-	-	-	-	(150,362)	(412,609)	(495,603)	108,393	485,885	697,852	459,855	262,510	74,354
Cumulative Project Cash Flow(Revised)	-	-	-	-	-	-	(150,362)	(562,971)	(1,058,574)	(950,181)	(464,296)	233,556	693,410	955,921	1,030,275
AFUDC(Capitalized Interest)	42,075	-	-	-	-	-	(1,509)	(10,883)	(16,737)	(10,386)	16,907	24,493	24,841	11,529	3,599
Gross Construction	1,072,349	-	-	-	-	-	(151,870)	(423,272)	(512,340)	98,007	502,793	722,345	464,698	274,039	77,953
Construction Work in Progress	-	-	-	-	-	-	(151,870)	(575,142)	(1,087,482)	(989,478)	(486,683)	235,662	720,358	994,397	1,072,349

\*Applicable index escalation rates for 2014 are estimated. Escalation is subject to restatement when actual indices for 2014 are final. These projections reflect current escalation rates. Future changes in escalation rates could substantially change these projections.

Exhibit No. \_\_ (CLW-3)

**RECONCILIATION TO ORDER No. 2012-884 AND BLRA INDICES COMPARISON****RECONCILIATION TO ORDER No. 2012-884(Thousands of \$)**

Revised Forecast Current Filing	\$	6,826,914
Forecast Order No. 2012-884	\$	5,754,565
Change	\$	1,072,349

**Reconciliation:**

Change in Base Project Costs(2007 \$)	\$	698,233
Change in Project Escalation	\$	332,042
Change in AFUDC	\$	42,075
Net	\$	1,072,349

**BLRA ESCALATION INDICES COMPARISON**

BLRA Indices	Order No. 2012-884 Escalation Rates	Jul 2014 Update Escalation Rates
<b>HW All Steam Index:</b>		
One Year Rate	4.51%	2.52%
Five Year Average	3.91%	3.21%
Ten Year Average	4.71%	4.35%
<b>HW All Steam/Nuclear Index:</b>		
One Year Rate	4.52%	2.52%
Five Year Average	3.87%	3.21%
Ten Year Average	4.72%	4.38%
<b>HW All Transmission Plant Index:</b>		
One Year Rate	2.48%	1.68%
Five Year Average	3.00%	2.83%
Ten Year Average	4.55%	4.05%
<b>GDP Chained Price Index:</b>		
One Year Rate	2.11%	1.55%
Five Year Average	1.69%	1.55%
Ten Year Average	2.26%	NA

V.C. Summer Units 2 and 3 - Summary of SCE&G Revisions to Capital Costs Schedules  
Dollars Reflect SCE&G 55% share (\$000)

Plant Cost Categories	Order No. 2009-104(A)	Change Total	Order No. 2010-12*	Change Total	Order No. 2011-345	Change Total	Order No. 2012-884	Change Total	Docket 2015-103-E
Fixed with No Adjustment		\$0	CONFIDENTIAL	\$61,578	CONFIDENTIAL	\$0	CONFIDENTIAL	(\$85,360)	CONFIDENTIAL
Firm with Fixed Adjustment A		\$0		\$0		\$0		\$0	
Firm with Fixed Adjustment B		\$1		\$541		\$19,504		\$52,971	
Firm with Indexed Adjustment		\$0		\$268,753		\$71,557		\$17,998	
Actual Craft Wages		(\$173,579)		(\$37,350)		\$59,794		\$198,626	
Non-Labor Costs		\$173,529		(\$277,582)		(\$12,399)		\$188,327	
Time & Materials		\$1		\$427		\$0		(\$19,425)	
Owners Costs		\$2		\$144,582		\$131,624		\$245,096	
Transmission Costs		\$0	\$308,591	\$13,000	\$311,591	\$7,921	\$329,512	\$0	\$329,512
Contingency		(\$438,293)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Base Project Costs (2007 \$)		\$4,534,744	\$4,096,455	\$173,949	\$4,270,404	\$278,001	\$4,548,405	\$698,233	\$5,246,638
Total Project Escalation		\$293,608	\$1,807,948	(\$547,093)	\$1,260,855	(\$292,411)	\$968,444	\$332,042	\$1,300,486
Total Revised Project Cash Flow		\$6,049,084	\$5,904,403	(\$373,144)	\$5,531,259	(\$14,410)	\$5,516,849	\$1,030,275	\$6,547,124
AFUDC (Capitalized Interest)		\$264,289	\$283,721	(\$28,037)	\$255,684	(\$17,969)	\$237,715	\$42,075	\$279,790
Gross Construction		\$6,313,373	\$6,188,124	(\$401,181)	\$5,786,943	(\$32,379)	\$5,754,564	\$1,072,350	\$6,826,914

\*Net of Contingency per Supreme Court Order

V.C. Summer Units 2 and 3 - Summary of SCE&G Itemized Capital Costs  
Dollars Reflect SCE&G 55% share (\$000)

A	B	C	D	E	F	G	H	I	J	K	L	M
Description of Item	Actual Costs Incurred as of 12/31/14	Projected Costs	Total (Actual + Projection)	Fixed with No Adjustment	Firm with Fixed Adjustment A	Firm with Fixed Adjustment B	Firm with Inflation Adjustment	Actual Craft Wages	Non-Labor Costs	Time & Materials	Owners Costs	Transmission
Order 2013-484			4,348,405									329,512
CONFIDENTIAL												
COB17 Commercial Settlement												
EAC Costs		482,227	482,227									
Liquidated Damages		(85,525)	(85,525)	(85,525)								
COB TBD Plant Layout Security	379	19,971	20,350			35,940		198,675	48,129		(55,955)	
COB TBD Cyber Security Phase II	803	17,953	18,756			13,299			236,529		9,133	
COB TBD Shield Blog Panels		12,100	12,100				12,100				30,350	
COB20 HealthCare Act		2,182	2,182								5,317	
COB19 PRIS Hardware & Software	484	616	1,100			307						
COB TBD Division/Common Q		880	880			1,100						
COB TBD Simulator Development System		605	605			680						
COB21 TMAAC		373	373			28					31	
COB TBD Warehouse Fire Security		121	121								121	
COB18 PericGuard		14	14									
Barline % Differential on Switchyard	(107)	14	(107)	164			14		670			
EPC Adjustment	1,420	451,316	452,736	(85,359)		52,971	(942)	198,675	288,328	(19,426)		
Owner's Cost Variance - Labor		139,583	139,583								139,583	
Owner's Cost Variance - Non Labor		116,469	116,469								116,469	
Costs not 1981-55/45		(11,097)	(11,097)								(11,097)	
Owner's Adjustment		243,996	243,996								243,997	
Transmission Costs												
Transmission Adjustment												
Project Adjustment	1,420	696,612	698,032	(85,359)		52,971	17,998	198,675	288,328	(19,426)	243,997	
Filing Per Application Docket No. 2015-103-4	1,420	696,612	698,032									329,512
CONFIDENTIAL												

Note - Several of the amounts noted above were calculated with an estimated DeEscalation rate, which will be trueed up.



Summary of Owner's Cost Adjustments - Delay vs Non-Delay

Budget Category	Total Variance	Delay Variance	Non-Delay Variance
<b>All Other</b>	<b>50,638,343</b>	<b>CONFIDENTIAL</b>	
Direct SCANA Services	40,546,783		
108-Interns - Workforce Planning	28,292		
117-Generation Environmental Supp and 118 Gas Environmental Support	8,440		
126-Work Force Planning	940,415		
130-Corporate Communications: 130, 303,497,502, 670, 807	200,337		
145-148 and 149 Transmission	142,130		
157-Regulatory Affairs Admin Gen	172,868		
174-Property Accounting and Corp Accounting Services	204,643		
1813-Audit Services Department	385,392		
212-Corporate Payables	15,725		
221-Land Management	12,078		
225-Resource Planning A&G	407,158		
265-Network Communications	(68,677)		
311-VCS HR Team	950,992		
351- and 817 Legal	901,915		
368-Technical Systems	7,986		
371-Livewell	790		
375-Compensation and Benefits	802		
392-& 444 SCANA & VCS1 Strategic Sourcing	29,078		
395-Supplier Strategy	21		
423-Tele Chargeback	(17,390)		
440-Office of Risk Management & Treasurer	(27,696)		
509-Telecommunications	(358,176)		
532- and 533 Power Delivery	848,889		
552-IST Chargeback CL	895,938		
604-SCANA University	18		
607-Aviation	(49,322)		
612-Transmission Planning	44		
788-Sumter Gas Operations	318		
804-Human Resource Team Mgmnt	-		
806-SCANA Legal Regulatory	1,946,636		
808-Government Affairs Econ Dev	532,907		
819-SCANA Community Affairs	214		
821-Marketing Information	669		
860-Civil Engineering	43,043		
932-Cola Trans Oper Maint	1,097		
955-Market & Operations Risk Dpt.	944		
984-SCANA Administration	(9,281)		
998-General	(2,588)		
All-Corporate Offset Cost Centers	(69)		
All-Unbudgeted SCANA Services Actuals <\$5000	2,028		
231-248, 255, 322 and 467 Executive Oversight	1,094,097		

Summary of Owner's Cost Adjustments - Delay vs Non-Delay

Budget Category	Total Variance	Delay Variance	Non-Delay Variance
824-Corporate Insurance Department	30,101,036	<b>CONFIDENTIAL</b>	
595-NND Legal	(2,704,626)		
812-Corporate Taxes	3,907,669		
<b>NND IST</b>	<b>9,813,612</b>		
<b>VC Summer Unit 1</b>	<b>277,948</b>		
104-Design Engineering	(15)		
121-VCS IST Operations	468		
185-Nuclear Licensing	238,874		
199-Quality Systems VCS	3,034		
237-Plant Support Engineering	3,020		
245-Instrumentation Control VCS	1,790		
249-Planning Outage	-		
283-Engineering Services A and G	208		
527-Operations VCS Station	24,185		
660-Test Unit	40		
680-Station Operations A and G	-		
681-Business & Financial Services	124		
698-Nuclear Operating Cost Management	4,647		
730-Organizational Dev and Perf	1,770		
757-Welding and Civil	-		
826-Maintenance Projects VCS	-		
All-Corporate Offset Cost Centers	(198)		
<b>NND-Operational Readiness</b>	<b>94,937,225</b>		
<b>NND Operations</b>	<b>26,337,699</b>		
<b>Operational Readiness</b>	<b>41,687,577</b>		
1039-Emergency Response Unit	5,062,578		
1071-NND Metrology	3,227,069		
1072-NND Instrumentation and Controls	14,290,398		
1073-NND Mechanical Maintenance	20,439,151		
1074-NND Electrical Maintenance	10,427,588		
540-Unit 2&3 Business and Finance	(35,548)		
544-Unit 2&3 Docs and Controls	749,450		
657-Unit 2&3 Maintenance Administration	(31,579,391)		
658-Unit 2 & 3 Outage, Planning, and Scheduling	16,977,801		
682-Unit 2&3 OD&P	184,989		
683-Unit 2&3 QA	2,052,260		
684-Unit 2&3 Licensing	(522,741)		
825-NND Emergency Planning, 728 Emergency Planning and 977 Radio Networking	(2,357,786)		
827-0827-NND Security & 200 Nuclear Protection Services	1,587,459		
828-NND Chemistry and 234 Chemistry VC Summer	2,813,665		
896-NND Health Physics and 539 Health Physics	5,540,513		
9999-Operational Readiness	(7,169,877)		
<b>Operational Readiness-Engineering</b>	<b>26,911,948</b>		



Summary of Owner's Cost Adjustments - Delay vs Non-Delay

Budget Category	Total Variance	Delay Variance	Non-Delay Variance
1035-Unit 2&3 Materials and Procurement	440,600	<b>CONFIDENTIAL</b>	
1068-NND Organization Effectiveness	4,143,444		
1069-NND Start-UP	3,930,122		
543-Unit 2&3 Design Engineering	(6,008,668)		
545-Unit 2&3 Engineering Programs	(1,350,397)		
655-NND Operations Readiness	25,127,530		
656-Unit 2&3 Fuels, Analysis, PRA	629,317		
<b>NND-Oversight</b>	<b>86,213,031</b>		
NND Business & Finance	686,272		
NND Construction	28,879,600		
622-Facilities Plan	7,174,769		
687-NND Construction	21,704,831		
NND Engineering	6,435,109		
NND Finance Admin	2,649,728		
NND Licensing, Permits, & Inspections	15,939,281		
NND Management Administration	38,772,111		
NND Non Split	(11,056,582)		
NND OD&P	846,472		
NND QA	3,061,040		
<b>NND-Training</b>	<b>13,307,227</b>		
NND Training	13,307,227		
<b>Grand Total</b>	<b>245,095,826</b>	<b>214,306,034</b>	<b>30,789,792</b>

Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
<b>All Other</b>			\$ 50,638,343
<b>Direct SCANA Services</b>			\$ 40,546,783
<b>108-Interns - Workforce Planning</b>			\$ 28,292
1xx-Labor with pensions, benefits and taxes			\$ 28,192
2xx-Materials and Supplies			\$ 99
<b>117-Generation Environmental Supp and 118 Gas Environmental Support</b>			\$ 8,440
1xx-Labor with pensions, benefits and taxes			\$ (31,932)
2xx-Materials and Supplies			\$ (4,736)
3xx-Transportation			\$ 10,538
4xx-General Business Expense			\$ 57,396
5xx-Outside Services			\$ (22,842)
6xx-Company Services			\$ 16
9xx-Accounting Transfers and Adjustments			\$ -
<b>126-Work Force Planning</b>			\$ 940,415
1xx-Labor with pensions, benefits and taxes			\$ 904,533
2xx-Materials and Supplies			\$ 73
3xx-Transportation			\$ 18,852
4xx-General Business Expense			\$ 16,733
6xx-Company Services			\$ 224
<b>130-Corporate Communications: 130, 303,497,502, 670, 807</b>			\$ 200,337
1xx-Labor with pensions, benefits and taxes			\$ 197,872
2xx-Materials and Supplies			\$ 55
3xx-Transportation			\$ 2,764
4xx-General Business Expense			\$ 3,266
5xx-Outside Services			\$ (3,758)
6xx-Company Services			\$ 140
<b>145-148 and 149 Transmission</b>			\$ 142,130
1xx-Labor with pensions, benefits and taxes			\$ 42,052
2xx-Materials and Supplies			\$ 1,770
3xx-Transportation			\$ (5,180)
4xx-General Business Expense			\$ 8,085
5xx-Outside Services			\$ 66,689
9xx-Accounting Transfers and Adjustments			\$ 28,715
<b>157-Regulatory Affairs Admin Gen</b>			\$ 172,868
1xx-Labor with pensions, benefits and taxes			\$ 97,844
2xx-Materials and Supplies			\$ -
4xx-General Business Expense			\$ 78,906
5xx-Outside Services			\$ (3,978)
6xx-Company Services			\$ 96
<b>174-Property Accounting and Corp Accounting Services</b>			\$ 204,643
1xx-Labor with pensions, benefits and taxes			\$ 80,905
2xx-Materials and Supplies			\$ 123,465
3xx-Transportation			\$ 160
4xx-General Business Expense			\$ (88)
6xx-Company Services			\$ 202
<b>1813-Audit Services Department</b>			\$ 385,392

CONFIDENTIAL



Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
1xx-Labor with pensions, benefits and taxes	CONFIDENTIAL		\$ 396,448
2xx-Materials and Supplies			\$ 294
3xx-Transportation			\$ 4,023
4xx-General Business Expense			\$ 3,599
6xx-Company Services			\$ (18,972)
<b>212-Corporate Payables</b>			<b>\$ 15,725</b>
1xx-Labor with pensions, benefits and taxes			\$ 15,964
3xx-Transportation			\$ -
4xx-General Business Expense			\$ (239)
<b>221-Land Management</b>			<b>\$ 12,078</b>
1xx-Labor with pensions, benefits and taxes			\$ 9,943
3xx-Transportation			\$ 604
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ 1,531
<b>225-Resource Planning A&amp;G</b>			<b>\$ 407,158</b>
1xx-Labor with pensions, benefits and taxes			\$ 392,569
3xx-Transportation			\$ 14,588
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ -
<b>265-Network Communications</b>			<b>\$ (68,677)</b>
1xx-Labor with pensions, benefits and taxes			\$ (60,744)
2xx-Materials and Supplies			\$ (561,136)
3xx-Transportation			\$ 552
4xx-General Business Expense			\$ 1,995
5xx-Outside Services			\$ 550,586
6xx-Company Services			\$ -
9xx-Accounting Transfers and Adjustments			\$ 69
<b>311-VCS HR Team</b>			<b>\$ 950,992</b>
1xx-Labor with pensions, benefits and taxes			\$ 931,671
2xx-Materials and Supplies			\$ 204
3xx-Transportation			\$ 4,647
4xx-General Business Expense			\$ 6,119
5xx-Outside Services			\$ 4,972
6xx-Company Services			\$ 3,380
<b>351- and 817 Legal</b>			<b>\$ 901,915</b>
1xx-Labor with pensions, benefits and taxes			\$ 860,853
2xx-Materials and Supplies			\$ -
3xx-Transportation			\$ (409)
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ 41,468
6xx-Company Services			\$ 3
<b>368-Technical Systems</b>			<b>\$ 7,986</b>
1xx-Labor with pensions, benefits and taxes			\$ 2,882
2xx-Materials and Supplies			\$ 3,028
3xx-Transportation			\$ 123
5xx-Outside Services			\$ 1,953

Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
<b>371-Livewell</b>	<b>CONFIDENTIAL</b>		\$ 790
5xx-Outside Services			\$ 790
<b>375-Compensation and Benefits</b>			\$ 802
1xx-Labor with pensions, benefits and taxes			\$ 802
<b>392-&amp; 444 SCANA &amp; VCS1 Strategic Sourcing</b>			\$ 29,078
1xx-Labor with pensions, benefits and taxes			\$ 68,203
2xx-Materials and Supplies			\$ (565)
3xx-Transportation			\$ 2,743
4xx-General Business Expense			\$ (504)
5xx-Outside Services			\$ (34,172)
6xx-Company Services			\$ (6,626)
<b>395-Supplier Strategy</b>			\$ 21
3xx-Transportation			\$ 21
<b>423-Tele Chargeback</b>			\$ (17,390)
6xx-Company Services			\$ (17,390)
<b>440-Office of Risk Management &amp; Treasurer</b>			\$ (27,696)
1xx-Labor with pensions, benefits and taxes			\$ (26,979)
3xx-Transportation			\$ (717)
4xx-General Business Expense			\$ -
<b>509-Telecommunications</b>			\$ (358,176)
1xx-Labor with pensions, benefits and taxes			\$ (134,214)
2xx-Materials and Supplies			\$ (50,699)
3xx-Transportation			\$ 43,385
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ (223,704)
6xx-Company Services			\$ 6,688
9xx-Accounting Transfers and Adjustments			\$ 369
<b>532- and 533 Power Delivery</b>			\$ 848,889
1xx-Labor with pensions, benefits and taxes			\$ 572,395
2xx-Materials and Supplies			\$ 58,996
3xx-Transportation			\$ 145,065
4xx-General Business Expense			\$ 1,518
5xx-Outside Services			\$ 63,405
6xx-Company Services			\$ 465
9xx-Accounting Transfers and Adjustments			\$ 7,045
<b>552-IST Chargeback CL</b>			\$ 895,938
6xx-Company Services			\$ 895,938
<b>604-SCANA University</b>			\$ 18
3xx-Transportation			\$ 18
<b>607-Aviation</b>			\$ (49,322)
3xx-Transportation			\$ (49,322)
<b>612-Transmission Planning</b>			\$ 44
1xx-Labor with pensions, benefits and taxes			\$ -
9xx-Accounting Transfers and Adjustments			\$ 44
<b>788-Sumter Gas Operations</b>			\$ 318
4xx-General Business Expense			\$ 318



Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
<b>804-Human Resource Team Mgmt</b>	<b>CONFIDENTIAL</b>		\$ -
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ -
<b>806-SCANA Legal Regulatory</b>			\$ 1,946,636
1xx-Labor with pensions, benefits and taxes			\$ 499,677
3xx-Transportation			\$ 422
4xx-General Business Expense			\$ 176
5xx-Outside Services			\$ 1,445,819
6xx-Company Services			\$ 542
<b>808-Government Affairs Econ Dev</b>			\$ 532,907
1xx-Labor with pensions, benefits and taxes			\$ (80,505)
5xx-Outside Services			\$ 613,412
<b>819-SCANA Community Affairs</b>			\$ 214
1xx-Labor with pensions, benefits and taxes			\$ 214
<b>821-Marketing Information</b>			\$ 669
1xx-Labor with pensions, benefits and taxes			\$ 669
<b>860-Civil Engineering</b>			\$ 43,043
1xx-Labor with pensions, benefits and taxes			\$ 42,748
3xx-Transportation			\$ 52
4xx-General Business Expense			\$ 243
<b>932-Cola Trans Oper Maint</b>			\$ 1,097
1xx-Labor with pensions, benefits and taxes			\$ 757
3xx-Transportation			\$ 327
9xx-Accounting Transfers and Adjustments			\$ 14
<b>955-Market &amp; Operations Risk Dpt.</b>			\$ 944
1xx-Labor with pensions, benefits and taxes			\$ (297)
3xx-Transportation			\$ 1,241
6xx-Company Services			\$ -
<b>984-SCANA Administration</b>			\$ (9,281)
3xx-Transportation			\$ (20,388)
6xx-Company Services			\$ 11,107
<b>998-General</b>			\$ (2,588)
1xx-Labor with pensions, benefits and taxes			\$ (2,588)
<b>All-Corporate Offset Cost Centers</b>			\$ (69)
1xx-Labor with pensions, benefits and taxes			\$ (69)
4xx-General Business Expense			\$ -
6xx-Company Services			\$ -
<b>All-Unbudgeted SCANA Services Actuals &lt;\$5000</b>			\$ 2,028
1xx-Labor with pensions, benefits and taxes			\$ 1,115
2xx-Materials and Supplies			\$ 195
3xx-Transportation			\$ 186
4xx-General Business Expense			\$ 492
5xx-Outside Services			\$ -
6xx-Company Services			\$ 40
9xx-Accounting Transfers and Adjustments			\$ -
<b>231-248, 255, 322 and 467 Executive Oversight</b>			\$ 1,094,097



Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
1xx-Labor with pensions, benefits and taxes			\$ 709,756
2xx-Materials and Supplies			\$ (580)
3xx-Transportation			\$ 5,612
4xx-General Business Expense			\$ (13,197)
5xx-Outside Services			\$ 399,888
6xx-Company Services			\$ 742
9xx-Accounting Transfers and Adjustments			\$ (8,124)
<b>824-Corporate Insurance Department</b>			<b>\$ 30,101,036</b>
1xx-Labor with pensions, benefits and taxes			\$ 131,754
2xx-Materials and Supplies			\$ (201)
3xx-Transportation			\$ (336)
4xx-General Business Expense			\$ 25,525,059
5xx-Outside Services			\$ 4,444,421
6xx-Company Services			\$ 339
9xx-Accounting Transfers and Adjustments			\$ -
<b>595-NND Legal</b>			<b>\$ (2,704,626)</b>
1xx-Labor with pensions, benefits and taxes			\$ 321,960
3xx-Transportation			\$ (397)
4xx-General Business Expense			\$ 3,630
5xx-Outside Services			\$ (3,030,407)
6xx-Company Services			\$ 588
<b>812-Corporate Taxes</b>			<b>\$ 3,907,669</b>
1xx-Labor with pensions, benefits and taxes			\$ 50,812
3xx-Transportation			\$ 730
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ 74,996
9xx-Accounting Transfers and Adjustments			\$ 3,781,131
<b>NND IST</b>			<b>\$ 9,813,612</b>
<b>1019-NND IST Operations and Chargeback</b>			<b>\$ 9,813,612</b>
1xx-Labor with pensions, benefits and taxes			\$ -
2xx-Materials and Supplies			\$ (3,996,756)
3xx-Transportation			\$ (3,101)
4xx-General Business Expense			\$ 113,139
5xx-Outside Services			\$ 124,899
6xx-Company Services			\$ 7,134,315
9xx-Accounting Transfers and Adjustments			\$ 6,441,116
<b>VC Summer Unit 1</b>			<b>\$ 277,948</b>
<b>104-Design Engineering</b>			<b>\$ (15)</b>
1xx-Labor with pensions, benefits and taxes			\$ -
2xx-Materials and Supplies			\$ (15)
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ -
<b>121-VCS IST Operations</b>			<b>\$ 468</b>
4xx-General Business Expense			\$ 468
<b>185-Nuclear Licensing</b>			<b>\$ 238,874</b>
1xx-Labor with pensions, benefits and taxes			\$ 223,535

CONFIDENTIAL

Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
3xx-Transportation	<b>CONFIDENTIAL</b>		\$ 1,261
4xx-General Business Expense			\$ 14,077
199-Quality Systems VCS			\$ 3,034
1xx-Labor with pensions, benefits and taxes			\$ 3,034
3xx-Transportation			\$ -
5xx-Outside Services			\$ -
237-Plant Support Engineering			\$ 3,020
1xx-Labor with pensions, benefits and taxes			\$ 2,679
4xx-General Business Expense			\$ 341
245-Instrumentation Control VCS			\$ 1,790
1xx-Labor with pensions, benefits and taxes			\$ 1,790
249-Planning Outage			\$ -
1xx-Labor with pensions, benefits and taxes			\$ -
283-Engineering Services A and G			\$ 208
1xx-Labor with pensions, benefits and taxes			\$ -
2xx-Materials and Supplies			\$ 208
4xx-General Business Expense			\$ -
527-Operations VCS Station			\$ 24,185
1xx-Labor with pensions, benefits and taxes			\$ 24,185
3xx-Transportation			\$ -
4xx-General Business Expense			\$ -
660-Test Unit			\$ 40
4xx-General Business Expense			\$ 40
680-Station Operations A and G			\$ -
1xx-Labor with pensions, benefits and taxes			\$ -
4xx-General Business Expense			\$ -
681-Business & Financial Services			\$ 124
1xx-Labor with pensions, benefits and taxes			\$ -
2xx-Materials and Supplies			\$ 124
3xx-Transportation			\$ -
4xx-General Business Expense			\$ -
5xx-Outside Services			\$ -
6xx-Company Services			\$ -
698-Nuclear Operating Cost Management			\$ 4,647
2xx-Materials and Supplies			\$ 4,647
730-Organizational Dev and Perf			\$ 1,770
1xx-Labor with pensions, benefits and taxes			\$ 1,770
757-Welding and Civil			\$ -
2xx-Materials and Supplies			\$ -
5xx-Outside Services			\$ -
826-Maintenance Projects VCS			\$ -
4xx-General Business Expense			\$ -
All-Corporate Offset Cost Centers			\$ (198)
1xx-Labor with pensions, benefits and taxes			\$ (198)
NND-Operational Readiness			\$ 94,937,225
NND Operations			\$ 26,337,699



Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
<b>659-NND Control Room Operations</b>	<b>CONFIDENTIAL</b>		\$ 26,337,699
1xx-Labor with pensions, benefits and taxes			\$ 26,018,402
2xx-Materials and Supplies			\$ 67,635
3xx-Transportation			\$ 3,867
4xx-General Business Expense			\$ 221,243
5xx-Outside Services			\$ (173,800)
6xx-Company Services			\$ 200,434
9xx-Accounting Transfers and Adjustments			\$ (81)
<b>Operational Readiness</b>			\$ 41,687,577
<b>1039-Emergency Response Unit</b>			\$ 5,062,578
1xx-Labor with pensions, benefits and taxes			\$ 3,692,803
2xx-Materials and Supplies			\$ 1,134,323
3xx-Transportation			\$ 5,056
4xx-General Business Expense			\$ 142,375
5xx-Outside Services			\$ 20,200
6xx-Company Services			\$ 67,821
<b>1071-NND Metrology</b>			\$ 3,227,069
1xx-Labor with pensions, benefits and taxes			\$ 1,342,643
2xx-Materials and Supplies			\$ 1,810,294
4xx-General Business Expense			\$ 35,700
5xx-Outside Services			\$ 10,749
6xx-Company Services			\$ 27,684
<b>1072-NND Instrumentation and Controls</b>			\$ 14,290,398
1xx-Labor with pensions, benefits and taxes			\$ 13,154,674
2xx-Materials and Supplies			\$ 407,783
3xx-Transportation			\$ 7,989
4xx-General Business Expense			\$ 208,764
5xx-Outside Services			\$ 252,195
6xx-Company Services			\$ 258,992
<b>1073-NND Mechanical Maintenance</b>			\$ 20,439,151
1xx-Labor with pensions, benefits and taxes			\$ 13,367,404
2xx-Materials and Supplies			\$ 5,495,685
3xx-Transportation			\$ 21,079
4xx-General Business Expense			\$ 337,367
5xx-Outside Services			\$ 938,186
6xx-Company Services			\$ 279,431
<b>1074-NND Electrical Maintenance</b>			\$ 10,427,588
1xx-Labor with pensions, benefits and taxes			\$ 8,873,577
2xx-Materials and Supplies			\$ 985,087
3xx-Transportation			\$ 7,715
4xx-General Business Expense			\$ 294,387
5xx-Outside Services			\$ 80,995
6xx-Company Services			\$ 185,827
<b>540-Unit 2&amp;3 Business and Finance</b>			\$ (35,548)
1xx-Labor with pensions, benefits and taxes			\$ (17,338)
2xx-Materials and Supplies			\$ (1,293)

Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
3xx-Transportation	CONFIDENTIAL	CONFIDENTIAL	\$ (615)
4xx-General Business Expense			\$ (4,868)
6xx-Company Services			\$ (11,433)
<b>544-Unit 2&amp;3 Docs and Controls</b>			<b>\$ 749,450</b>
1xx-Labor with pensions, benefits and taxes			\$ 637,926
2xx-Materials and Supplies			\$ 57,865
3xx-Transportation			\$ (1,199)
4xx-General Business Expense			\$ 20,013
5xx-Outside Services			\$ 5,913
6xx-Company Services			\$ 24,556
9xx-Accounting Transfers and Adjustments			\$ 4,376
<b>657-Unit 2&amp;3 Maintenance Administration</b>			<b>\$ (31,579,391)</b>
1xx-Labor with pensions, benefits and taxes			\$ (28,404,898)
2xx-Materials and Supplies			\$ (3,149,701)
3xx-Transportation			\$ (18,010)
4xx-General Business Expense			\$ (314,429)
5xx-Outside Services			\$ 588,887
6xx-Company Services			\$ (281,239)
<b>658-Unit 2 &amp; 3 Outage, Planning, and Scheduling</b>			<b>\$ 16,977,801</b>
1xx-Labor with pensions, benefits and taxes			\$ 15,448,620
2xx-Materials and Supplies			\$ 54,671
3xx-Transportation			\$ 21,790
4xx-General Business Expense			\$ 636,935
5xx-Outside Services			\$ 411,760
6xx-Company Services			\$ 403,977
9xx-Accounting Transfers and Adjustments			\$ 47
<b>682-Unit 2&amp;3 OD&amp;P</b>			<b>\$ 184,989</b>
1xx-Labor with pensions, benefits and taxes			\$ 196,148
2xx-Materials and Supplies			\$ (1,241)
3xx-Transportation			\$ (434)
4xx-General Business Expense			\$ (5,975)
5xx-Outside Services			\$ 7,488
6xx-Company Services			\$ (10,998)
<b>683-Unit 2&amp;3 QA</b>			<b>\$ 2,052,260</b>
1xx-Labor with pensions, benefits and taxes			\$ 1,321,541
2xx-Materials and Supplies			\$ 98,336
3xx-Transportation			\$ 3,107
4xx-General Business Expense			\$ 31,508
5xx-Outside Services			\$ 596,287
6xx-Company Services			\$ 1,480
<b>684-Unit 2&amp;3 Licensing</b>			<b>\$ (522,741)</b>
1xx-Labor with pensions, benefits and taxes			\$ (497,473)
2xx-Materials and Supplies			\$ (727)
3xx-Transportation			\$ 608
4xx-General Business Expense			\$ (8,003)
5xx-Outside Services			\$ (809)



Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
6xx-Company Services			\$ (16,337)
<b>825-NND Emergency Planning, 728 Emergency Planning and 977 Radio Networking</b>			<b>\$ (2,357,786)</b>
1xx-Labor with pensions, benefits and taxes			\$ (2,700,124)
2xx-Materials and Supplies			\$ (896,044)
3xx-Transportation			\$ 1,525
4xx-General Business Expense			\$ 739,391
5xx-Outside Services			\$ 81,230
6xx-Company Services			\$ 400,895
9xx-Accounting Transfers and Adjustments			\$ 15,341
<b>827-0827-NND Security &amp; 200 Nuclear Protection Services</b>			<b>\$ 1,587,459</b>
1xx-Labor with pensions, benefits and taxes			\$ 1,830,657
2xx-Materials and Supplies			\$ 165,928
3xx-Transportation			\$ 25,675
4xx-General Business Expense			\$ (101,889)
5xx-Outside Services			\$ (386,603)
6xx-Company Services			\$ 53,693
9xx-Accounting Transfers and Adjustments			\$ (1)
<b>828-NND Chemistry and 234 Chemistry VC Summer</b>			<b>\$ 2,813,665</b>
1xx-Labor with pensions, benefits and taxes			\$ 2,576,744
2xx-Materials and Supplies			\$ 167,393
3xx-Transportation			\$ 1,070
4xx-General Business Expense			\$ 5,824
5xx-Outside Services			\$ 33,023
6xx-Company Services			\$ 29,612
<b>896-NND Health Physics and 539 Health Physics</b>			<b>\$ 5,540,513</b>
1xx-Labor with pensions, benefits and taxes			\$ 4,893,307
2xx-Materials and Supplies			\$ 636,968
3xx-Transportation			\$ (1,787)
4xx-General Business Expense			\$ (23,862)
5xx-Outside Services			\$ (43,286)
6xx-Company Services			\$ 66,256
9xx-Accounting Transfers and Adjustments			\$ 12,917
<b>9999-Operational Readiness</b>			<b>\$ (7,169,877)</b>
2xx-Materials and Supplies			\$ (7,169,877)
<b>Operational Readiness-Engineering</b>			<b>\$ 26,911,948</b>
<b>1035-Unit 2&amp;3 Materials and Procurement</b>			<b>\$ 440,600</b>
1xx-Labor with pensions, benefits and taxes			\$ 638,408
2xx-Materials and Supplies			\$ (5,422)
3xx-Transportation			\$ (1,223)
4xx-General Business Expense			\$ (1,546)
5xx-Outside Services			\$ (158,290)
6xx-Company Services			\$ (31,375)
9xx-Accounting Transfers and Adjustments			\$ 47
<b>1068-NND Organization Effectiveness</b>			<b>\$ 4,143,444</b>
1xx-Labor with pensions, benefits and taxes			\$ 3,420,889

CONFIDENTIAL



Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
2xx-Materials and Supplies	<b>CONFIDENTIAL</b>		\$ 494
3xx-Transportation			\$ 2,218
4xx-General Business Expense			\$ 675,603
5xx-Outside Services			\$ 14,816
6xx-Company Services			\$ 29,424
<b>1069-NND Start-UP</b>			<b>\$ 3,930,122</b>
1xx-Labor with pensions, benefits and taxes			\$ 3,049,453
2xx-Materials and Supplies			\$ 951
3xx-Transportation			\$ 7,809
4xx-General Business Expense			\$ 193,698
5xx-Outside Services			\$ 642,017
6xx-Company Services			\$ 36,194
<b>543-Unit 2&amp;3 Design Engineering</b>			<b>\$ (6,008,668)</b>
1xx-Labor with pensions, benefits and taxes			\$ (5,515,481)
2xx-Materials and Supplies			\$ (12,558)
3xx-Transportation			\$ (16,938)
4xx-General Business Expense			\$ (131,862)
5xx-Outside Services			\$ (146,917)
6xx-Company Services			\$ (184,912)
<b>545-Unit 2&amp;3 Engineering Programs</b>			<b>\$ (1,350,397)</b>
1xx-Labor with pensions, benefits and taxes			\$ (1,263,533)
2xx-Materials and Supplies			\$ (2,194)
3xx-Transportation			\$ (3,359)
4xx-General Business Expense			\$ (31,666)
5xx-Outside Services			\$ (12,491)
6xx-Company Services			\$ (37,153)
<b>655-NND Operations Readiness</b>			<b>\$ 25,127,530</b>
1xx-Labor with pensions, benefits and taxes			\$ 21,662,614
2xx-Materials and Supplies			\$ 363,735
3xx-Transportation			\$ 46,252
4xx-General Business Expense			\$ 884,814
5xx-Outside Services			\$ 1,787,937
6xx-Company Services			\$ 382,231
9xx-Accounting Transfers and Adjustments			\$ (52)
<b>656-Unit 2&amp;3 Fuels, Analysis, PRA</b>			<b>\$ 629,317</b>
1xx-Labor with pensions, benefits and taxes			\$ 710,932
2xx-Materials and Supplies			\$ (3,321)
3xx-Transportation			\$ (19,812)
4xx-General Business Expense			\$ (1,364)
5xx-Outside Services			\$ (42,734)
6xx-Company Services			\$ (14,383)
<b>NND-Oversight</b>			<b>\$ 86,213,031</b>
<b>NND Business &amp; Finance</b>			<b>\$ 686,272</b>
<b>232-NND Business &amp; Financial Service</b>			<b>\$ 686,272</b>
1xx-Labor with pensions, benefits and taxes			\$ 495,271
2xx-Materials and Supplies			\$ (299,283)

Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
3xx-Transportation	CONFIDENTIAL		\$ (14,054)
4xx-General Business Expense			\$ (27,300)
5xx-Outside Services			\$ 540,839
6xx-Company Services			\$ (9,201)
9xx-Accounting Transfers and Adjustments			\$ -
<b>NND Construction</b>			<b>\$ 28,879,600</b>
<b>622-Facilities Plan</b>			<b>\$ 7,174,769</b>
1xx-Labor with pensions, benefits and taxes			\$ -
2xx-Materials and Supplies			\$ 410,054
4xx-General Business Expense			\$ (29,460)
5xx-Outside Services			\$ (6,124,072)
6xx-Company Services			\$ 372,917
9xx-Accounting Transfers and Adjustments			\$ 12,545,330
<b>687-NND Construction</b>			<b>\$ 21,704,831</b>
1xx-Labor with pensions, benefits and taxes			\$ 5,564,243
2xx-Materials and Supplies			\$ 33,861
3xx-Transportation			\$ 257,292
4xx-General Business Expense			\$ 334,059
5xx-Outside Services			\$ 14,429,304
6xx-Company Services			\$ 540,179
9xx-Accounting Transfers and Adjustments			\$ 545,892
<b>NND Engineering</b>			<b>\$ 6,435,109</b>
<b>197-NND Engineering</b>			<b>\$ 6,435,109</b>
1xx-Labor with pensions, benefits and taxes			\$ 482,680
2xx-Materials and Supplies			\$ 4,751
3xx-Transportation			\$ 20,368
4xx-General Business Expense			\$ 4,820
5xx-Outside Services			\$ 5,973,208
6xx-Company Services			\$ (50,716)
<b>NND Finance Admin</b>			<b>\$ 2,649,728</b>
<b>1021-NND Finance</b>			<b>\$ 2,649,728</b>
1xx-Labor with pensions, benefits and taxes			\$ 2,607,269
2xx-Materials and Supplies			\$ 15,988
3xx-Transportation			\$ 2,876
4xx-General Business Expense			\$ 8,076
5xx-Outside Services			\$ (6,149)
6xx-Company Services			\$ 21,668
<b>NND Licensing, Permits, &amp; Inspections</b>			<b>\$ 15,939,281</b>
<b>209-NND Nuclear Licensing</b>			<b>\$ 15,939,281</b>
1xx-Labor with pensions, benefits and taxes			\$ 2,334,614
2xx-Materials and Supplies			\$ 3,991
3xx-Transportation			\$ 4,775
4xx-General Business Expense			\$ 10,935,413
5xx-Outside Services			\$ 2,626,752
6xx-Company Services			\$ 33,465
9xx-Accounting Transfers and Adjustments			\$ 271



Summary of Owner's Cost Adjustments - Labor vs Non-Labor

Description by Department and Summary Resource Code	Labor Increases	Non-Labor Increases	Total Increases
<b>NND Management Administration</b>	<b>CONFIDENTIAL</b>		\$ 38,772,111
<b>727-New Nuclear Deployment</b>			\$ 38,772,111
1xx-Labor with pensions, benefits and taxes			\$ 22,537,408
2xx-Materials and Supplies			\$ 28,279
3xx-Transportation			\$ 7,255
4xx-General Business Expense			\$ 13,297,582
5xx-Outside Services			\$ 6,190,149
6xx-Company Services			\$ 499,760
7xx-Land and Land Rights			\$ -
9xx-Accounting Transfers and Adjustments			\$ (3,788,322)
<b>NND Non Split</b>			\$ (11,056,582)
<b>1111-NND Non Split</b>			\$ (11,056,582)
1xx-Labor with pensions, benefits and taxes			\$ 808,507
2xx-Materials and Supplies			\$ (8,937)
3xx-Transportation			\$ 56,118
4xx-General Business Expense			\$ (10,301,744)
5xx-Outside Services			\$ (109,835)
9xx-Accounting Transfers and Adjustments			\$ (1,500,692)
<b>NND OD&amp;P</b>			\$ 846,472
<b>839-NND Organizational Dev and Perf</b>			\$ 846,472
1xx-Labor with pensions, benefits and taxes			\$ 964,249
2xx-Materials and Supplies			\$ 246
3xx-Transportation			\$ (2,372)
4xx-General Business Expense			\$ (27,133)
5xx-Outside Services			\$ (63,330)
6xx-Company Services			\$ (25,189)
<b>NND QA</b>			\$ 3,061,040
<b>233-NND Quality Assurance</b>			\$ 3,061,040
1xx-Labor with pensions, benefits and taxes			\$ 1,657,007
2xx-Materials and Supplies			\$ 5,473
3xx-Transportation			\$ (83)
4xx-General Business Expense			\$ 193,856
5xx-Outside Services			\$ 1,204,141
6xx-Company Services			\$ 646
9xx-Accounting Transfers and Adjustments			\$ -
<b>NND-Training</b>			\$ 13,307,227
<b>NND Training</b>			\$ 13,307,227
<b>285-NND Training and 252 Nuclear Ops Training</b>			\$ 13,307,227
1xx-Labor with pensions, benefits and taxes			\$ 12,320,286
2xx-Materials and Supplies			\$ (46,832)
3xx-Transportation			\$ 21,496
4xx-General Business Expense			\$ 194,765
5xx-Outside Services			\$ 664,930
6xx-Company Services			\$ 154,441
9xx-Accounting Transfers and Adjustments			\$ (1,858)
<b>Grand Total</b>	\$ 140,491,482	\$ 104,604,343	\$ 245,095,826